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FRITILLARIA IMPERIALIS (CROWN IMPERIAL)

EVERY MAN'S BOOK

OF THE

GREENHOUSE

(UNHEATED)

By WALTER IRVING
OF THE ROYAL GARDENS, KEW

WITH 88 ILLUSTRATIONS, INCLUDING 8 IN COLOUR, FROM PHOTOGRAPHS BY HENRY IRVING

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CONTENTS.

Introduction			-	-	-	Page.
Soils	-	Chapter I.	-			7
Propagation	-	CHAPTER II.	-		-	10
Potting -	-	CHAPTER III.	_			14
Watering -		CHAPTER IV.				16
Ventilation -		CHAPTER V.				
	-	CHAPTER VI.		•	-	18
Insects -	-	CHAPTER VII.	-	•	-	20
Frame Hotbed	-		-	-	-	23

Stoves for	r Hea		Снан the G				-	-	25
Window	Garde	ening			IX.		-	-	27
Plants Su	itable	for		apter l Gre		ıse		-	34
			Сна	PTER	XI.				
Bulbs -	-	-	-	-	-	-	-	-	151
			Сна	PTER	XII.				
Ferns -	-		-				-	-	201
			Снар	TER	XIII.				
Palms	-	-					-	-	210
			Сная	TER	XIV.				
Cacti -	-	-	-	-	-	-	-	-	214
			Сна	PTER	XV.				
Tomato	-	-	-	-	-	-	-	-	220
			Сная	TER	XVI.				
Roses	-	-	-	-	-	-	-	-	222
					XVII.				
Miscellan	eous :	Plan	ts -	-	-	-	-	-	228

INTRODUCTION.

An unheated greenhouse of some kind or another is frequently found either connected with the house, or standing by itself in the garden. The present book is intended for those who possess such a greenhouse, and who would like to utilise it to the best advantage. With a little trouble, and small expense in buying plants, bulbs, and seeds, in the proper season, it may be made bright with flowers during the greater part of the year. Besides flowers, handsome foliage plants like Aspidistras, Palms, and Ferns might also be grown, and these could be used occasionally for the purpose of decorating the rooms and windows of the house. With the aid of an oil or gas stove to keep out the frost, even if it is not convenient to keep the temperature of the house up to a higher degree sufficient to grow tender plants, many stock plants of such things as Dahlias, Geraniums, and others of a like nature. used for summer bedding, may be kept through the winter months. In the spring the house may also be used for propagating plants of which a quantity are required, either by means of cuttings, or seeds

In the following pages an endeavour will be made to show in what manner the cold greenhouse may be successfully managed throughout the year. Also a list of those plants that are attractive and readily grown with reasonable care will be added. Special attention will be given to this list, in order to have a certain number of plants in flower during each month, forming a succession throughout the year.

A short chapter is devoted to window gardening, with suggestions as to the most suitable plants

for use.

CHAPTER I.

SOILS.

The choice of soils for potting various plants is a most important matter when a great variety of different kinds are grown. Such plants as Heaths, many of the Rhododendrons, and other members of that family require peat, while the greater number of plants, such as would be available for the cold greenhouse, will do best in a mixture of loamy soil.

Peat is of a spongy nature, composed of a vegetable matter which has undergone a peculiar change. It is extensively used in gardens for American and other plants of a similar nature. The whole mass is formed of partly decayed plants which have accumulated in the course of time in various positions, either in mountain valleys or plains, successive layers of plants being added to the mass from time to time.

Loam is the soil that is most generally used for plants. It varies a good deal, from the stiff clayey kind, to that which is of a light nature, and contains a large proportion of sand. The best loam is

8 Soils.

obtained from old pasture land, and only the top spit of about six inches should be used. This contains plenty of fibre that tends to keep the soil open, and provides a certain amount of nutriment

for growing plants.

Leaf Soil consists of rotten leaves that are more or less decomposed. It is a valuable constituent for growing plants, especially those of a soft wooded nature. Leaf soil is made by collecting the fallen leaves in the autumn, putting them together into a heap, and allowing them to rot till fit for use. They are usually turned over once or twice to hasten decomposition.

Sand in greater or less quantities is necessary for most plants in pots, otherwise the soil, through the continued application of water, becomes too closely set, and gets into a sour condition. This is fatal to the well being of all plants. The best sand is that of a sharp gritty nature without dust.

In preparing soil for potting, it should not be sifted except for newly struck cuttings or seeds. Soil that has passed through a sieve is of too close a nature for plants to stand in for any length of time, and has a tendency to get sour, even with plenty of sand added. It should be broken up in pieces according to the size of the plant potted, and all the fibre should be retained. Potting soils of all kinds are much better in the open air till they are required for use. If it is very wet, however, it would be advisable to bring some in under cover in order that it may become dry enough for use. It is injurious to pot a plant in wet soil, and this is

Soils.

9

the cause of many failures. On the other hand soil that has been kept in the dry too long loses its properties, and plants do not flourish well when potted in it.

CHAPTER II.

PROPAGATION.

There are many ways of propagating plants which are in general use, among which one of the chief methods is by means of seed. Other plants are increased by means of cuttings, runners, offsetts, layers, division of the rootstock, separating the bulbs, as in the case of Narcissus, grafting and budding. Taking them in order, the most important

method is certainly by means of

Seed.—This may be called the most natural means of propagation, and the most healthy and vigorous plants are produced in this way. Seeds usually ripen in the summer and autumn, and although many will germinate if sown at once, others remain dormant till the following spring. Such things as hardy annuals ripen seeds early, and fall on the ground, where they germinate with the first rains, and form nice little plants before winter, ready for flowering in spring or early summer. Biennials like Canterbury Bells, and Wall flowers, require to be sown in July or August for flowering the following year. Other seeds require to be kept in a cool, dry place during the winter, and sown in spring.

In order to be successful in raising seeds, they must be perfectly ripened, kept in a suitable place during the winter, and sown at the proper time, and under suitable conditions.

Spring is the best time for sowing nearly all seeds, exceptions being those of the Ranunculus and Lily family—which should be sown as soon as they are ripe—among others. There are also the biennials, like Canterbury Bells, Sweet Williams, and Wallflowers, which require to be sown in summer for flowering in the following spring and summer. The chief conditions necessary for success in raising seedlings, is a finely pulverised fertile soil, and uniform moisture. If the soil is allowed to become dry during the process of germination it will be fatal for the seedlings. On the contrary, to allow the soil to get sour and waterlogged is equally bad.

Bulbs.—Propagation by bulbs is easily effected. They are usually taken up as soon as the leaves have turned brown, and may be kept in a cool dry place till it is necessary to plant again. Where two or more bulbs are growing together as in the case of Narcissus and Hyacinths they may be separated when dried off. This applies also to Crocuses, which are much benefited by being lifted and separated, and then replanted. Tubers, of which the Potato is a good example, may be cut up into several pieces, as long as there is an

eye or growing bud left to each.

Division of Roots.—Although the above may be termed a kind of division, the term is usually

applied when propagating such things as herbaceous perennials, which can be taken up and cut into many pieces or crowns. In the case of Phloxes, Asters, or Michaelmas Daisies, they may be split up into many pieces, each piece with a bit of root and a few growing points or crowns. This is one of the easiest methods of increasing plants, providing that it is done at the proper time. In all cases it is necessary to see that one or more crowns are left on each piece.

Runners.—Many plants produce runners which are supported by the parent plant for a time, and then form separate little plants at some distance away from the old one. The Strawberry is a good example of this, and when the conditions are favourable the little crown formed at the end of the runner sends out roots, and attaches itself to the ground. The growing point of the runner still goes on, and another plant is formed still further away. This affords an easy means of increase, as when the runners are rooted, they may be taken up and be replanted elsewhere.

Root Suckers.—Some plants like the Gooseberry form shoots which proceed from the stem under ground, and come up at some distance from the plants. They are termed root suckers, and may often be detached with plenty of roots. Such

pieces soon make good plants.

· Layers.—A layer is a branch or shoot, part of which is introduced into the soil, and strikes root whilst fed by the parent plant. At the point where roots are desired the branch is usually cut

partly through, this causing the flow of sap to be arrested, and inducing roots to form on the edge

of the cut portion.

Cuttings.—A cutting for propagation is an entirely detached portion of a plant, usually a shoot a few inches long, furnished with buds and leaves. Cuttings should be taken from healthy plants, and should be taken at the proper season, which varies for different plants. Most soft wooded plants will strike in spring and summer, while tree and shrub cuttings require to be put in when the wood is ripe in autumn. Cuttings struck in spring and summer require to be kept in a close frame till they are rooted. The following directions will serve as a rule for cuttings:

Take a pot, half fill it with broken potsherds, over which place some moss. Then fill up with a compost of loam, leaf mould, and sand, leaving half an inch at the top for silver sand. When the cuttings are inserted the sand will run into the holes around the cuttings. Cuttings should be short, and cut off just below a joint, leaving two or three buds above. They should be pressed firmly into the pots, and may then be placed in a

frame which can be kept quite close.

While the above methods of propagation include all that the amateur is likely to require, there are several others, as for instance, budding and grafting. The former is used for such things as standard Roses, and the grafting for fruit and other kinds of trees. Of this there are several kinds, which it

is not desirable to go into in this work.

CHAPTER III.

POTTING.

After securing a clean pot the next important point is to provide thorough drainage. Without this it is useless to expect any plant to thrive, as absence of drainage causes the soil to get into a saturated condition, and eventually sour, a condition that is finally fatal to our plants. Drainage is provided for by a hole in the bottom of all garden pots. Before potting, a broken potsherd, or even an old oyster shell, should be placed, hollow side downwards, over the hole. On the top of this a quantity of smaller potsherds, or bricks broken up into small pieces, should be placed, and this will provide complete drainage. In order to keep the fine soil from being washed in amongst the drainage, a layer of dry leaves, moss, or rough soil should come next. Having got the pot ready so far, now take the plant that is to be potted on, knock it carefully out of the pot, and remove the potsherds at the bottom, even if some roots have to be sacrificed. Insert it into the new pot so that

the surface of the old ball is rather more than half an inch below the rim; then keeping the plant upright with one hand, fill in the soil with the other, pressing it down gently, but firmly, until the pot is filled just above the level of the old ball. Keep the surface of the soil level in the pot, so that water will soak in evenly all over. Glazed pots are not good for plants, neither should the pots be painted. The more porous they are, the better plants will grow in them, as the roots require air as much in proportion as the stem and leaves of the plant. Potting may take place at any time with care, but the best time for most plants is in the spring, just before growth commences.

CHAPTER IV.

WATERING.

Although often much neglected, this operation is of great importance, if one wishes to succeed in growing plants. In far too many instances plants are periodically watered whether they want it or not, and often, just a little is given, enough to wet the surface, but leaving the rest dry. It is not possible to give definite rules with regard to watering, except that when a plant is dry it ought to be thoroughly soaked, and not merely sprinkled. A little observation will soon give an idea as to the requirements of the different plants. Those pots that are full of roots will naturally require a great deal more than a plant which has just been potted. In the latter case much care should be given to it for a time, till the roots are growing freely. Some plants require less moisture than others, as in the case of a Geranium, which succeeds best with considerably less water than some of the Ferns. Over watering produces a sour waterlogged soil, especially if the drainage is in any way imperfect. This condition is fatal to all plants, and should by all means

be avoided. When growing freely, most plants require an abundance of moisture, but when growth is mature and they are ripening off it should be withheld to a certain extent, and when resting, the soil should be merely kept in a slightly moist condition. Of course in the case of bulbs which have lost their foliage, water is withheld altogether till they commence to grow again. As the soil would be dust-dry then, the pots ought to be stood in a pan of water in order to thoroughly soak the ball of soil. Otherwise if watered in the ordinary way the centre of the ball never gets moist. In addition to watering the plants in a greenhouse in the ordinary way, they will benefit greatly if the stages and paths are damped down with water occasionally; this will keep the atmosphere of the house in a moist condition. Of course this is only necessary in hot dry weather, when there is much evaporation. A good method of ascertaining if a plant requires water is to tap the pot sharply with the knuckles, and if a clear ringing sound is produced, it follows that the soil is dry and slightly drawn away from the sides of the pot; if on the other hand the sound is dull or dead, no water is required. This is the general method in use in gardens.

CHAPTER V.

VENTILATION.

Ventilation is one of the most important points in connection with growing plants in greenhouses. Plants under glass do not necessarily receive so much fresh air as they get in their native countries, and it requires a little thought and intelligence when admitting air to plants grown under these conditions. Plants will not thrive if they are subjected to a direct draught of cold air, nor if air is withheld altogether. When air is necessary it should always be admitted on the side opposite to the direction in which the wind is blowing. It should be regulated according to the state in which the plants are. If full of young growth it will be better to keep them a few degrees warmer than allow too much cold air to enter. But as the plants grow, and the wood gets harder, more air can with safety be admitted. Success or failure depends to a great extent on the proper ventilation of the greenhouse, for a direct cold draught will frequently cripple plants so as to make them useless, and on the other hand a close atmosphere will make the plants grow weak and sickly.

Temperature.—In an unheated greenhouse of course the night temperature cannot be controlled. But if it is desired to grow certain plants it will be necessary to employ some means of keeping out the frost. If the house can be kept at a temperature above 35° on the coldest nights we could grow many things that would suffer with a lower temperature. Oil heating stoves are very convenient, and with their assistance in cold weather much could be done. Covering up the house with roller blinds composed of frigi-domo, also greatly assists in keeping up the temperature at night. The temperature during the day would of course depend on the weather, and air given accordingly.

CHAPTER VI.

INSECTS.

Plants grown in greenhouses, and in the rooms of a house, are very subject to attacks by insects of various kinds. This is due to the artificial conditions under which they are grown, and which tends to make them less vigorous than when grown under natural conditions. If these insects are allowed to establish themselves, they not only disfigure the plant, but do great injury, which cannot be remedied during the same season. A condition of perfect freedom from insect pests is indispensable to the successful cultivation of all kinds of plants, especially those of a soft-wooded character. Three of the most destructive are, Aphides (Green Fly), Red Spider, and Thrips.

Green Fly is very partial to many plants, and if allowed to gain a footing it will increase rapidly and cripple a plant in a short time. Plants should be carefully examined at frequent intervals for indications of this pest, and if any of the leaves are partly curled, there is sure to be a colony underneath. This should be destroyed at once, as a

day's delay may give them time to spread to others. If they have become established on many plants the house should be fumigated with tobacco smoke, or one of the Vapourisers that are sold for this purpose. Individual plants may be dipped in a solution of soft soap and tobacco juice, which may be mixed up in a pail, or other vessel large enough to take the plant. Do not keep it in more than a minute or so, and do not let the soil in the pot get wet.

Red Spider is a very troublesome pest, and is very fond of a dry atmosphere. They are very small and of a red colour, and possess the power of spinning a web like the ordinary spider. This web is very fine, and the insects in time cover the whole of the surface of the leaf with it. They subsist on the juices of the plant they attack, and under the influence of their presence the leaves turn a sickly yellow colour. One of the most efficient remedies is sulphur, which should be mixed with soap and applied in infusion to the leaves by a syringe. Care should be taken that the under side of the leaves is well wetted with the solution.

Thrips.—These are small, slender, black insects, and are frequently very troublesome on Ferns and other plants. Wherever they form a colony on the leaf it soon turns brown and unsightly, eventually spreading over the entire leaf. Syringing with a solution of soft soap and water will keep it in check, or if the leaves are large enough to handle they should be sponged with the same solution. Both Thrips and Red Spider may be kept in check

to a great extent by keeping the atmosphere in the

greenhouse in a suitable moist condition.

Besides the above common pests, there are others like Mealy Bug, and Scales, but these are seldom troublesome in a cold house. A careful watch, however, should be kept on the plants, and if any are found, should be at once sponged off. Myrtles are frequently attacked by Mealy Bug, which is a white woolly-looking insect. Scales are flat, and are often found on Palms. They cling so tight to the leaves that it is often necessary to scrape them off with a blunt-pointed stick.

CHAPTER VII.

FRAME HOTBED.

Where there is room and the convenience for it a small hotbed would prove of great value in spring, for raising seeds and striking cuttings. is not always convenient to keep the greenhouse close enough for this purpose, as it would prove harmful to the other occupants. Therefore, if possible, a small frame in size according to requirements should be procured. A hotbed may be made with stable manure and leaves. This must be turned over and well mixed together several times, at intervals of a day or two. In making up the hotbed it should be a bit larger than the frame which is to stand on it, and it should be nearly three feet in depth, otherwise the heat will soon decline. If the material is dry when turning, it should be watered. When forming the hotbed it should be trodden down firmly and evenly in order to maintain the proper temperature. For a few days after it is made and the frame placed on it, plenty of air should be given in order to let the steam escape. No plants should be put in

immediately, or seeds sown, till all danger of harm from rank steam is passed. This will be in about a week from the time it is made. This frame will be found useful for raising seeds of Tomatoes, Vegetable Marrows, Petunias, Lobelias, or any of the tender half-hardy annuals like Phlox Drummondi, China Asters, Stocks, and similar subjects that require a little heat. Cuttings of Geraniums, Fuchsias, and all the softer-wooded plants may also be struck in this frame. Directions for making cuttings and the proper time will be found on another page. A layer of cocoanut fibre may be placed on the top of the bed inside the frame to stand the pots on, or plunge them to the rim.

CHAPTER VIII.

STOVES FOR HEATING THE GREENHOUSE.

While many plants may be grown in a cold greenhouse without the aid of artificial heat, it would be a great advantage to have some means of keeping out the frost, and if possible to keep the house up to a minimum temperature of 40 degrees. In such a house it would be possible to grow many more plants, and make it more attractive during the winter season. Many people object to oil stoves in a plant house, and say that they are injurious to the plants. It, however, depends greatly on the way in which they are managed, for if allowed to get dirty and foul, of course one may expect them to send off obnoxious fumes. But if kept clean, and properly trimmed, and not allowed to smoke, they answer the purpose very well. There are several kinds on sale now, some of which possess great heating power. A good one may be got for between 30s. and 40s. that will answer all purposes. One of the best is a small stove to which are fixed small pipes in the form of a barred gate. These consist of a flow and return, and are filled with

26 Stoves for Heating the Greenhouse.

water, which is heated by an oil stove at one end. There is a great advantage in this, as the heatgiving surface is of considerable extent, and once
the water in the pipes is thoroughly hot, it takes
less oil to keep it going. Such a little stove would
be ample for the average greenhouse that is
attached to suburban villas. Gas stoves also may
be obtained for heating purposes, and are less
trouble than oil when once fixed. They are made
so that the pipes can be fixed inside the house,
and the boiler on the outside, with connecting
pipes of the length required. Such a heating
apparatus would require little attention when once
the heat is got up, and there would be no fumes
inside to injure the plants.

CHAPTER IX.

WINDOW GARDENING.

Window boxes well filled with suitable plants are a great attraction to any house, and to a great extent help to beautify that which would otherwise be a plain and uninteresting front without the cheering presence of flowers. It is strange that so few, comparatively speaking, take so little interest in this form of gardening, especially when it can be so cheaply done. Many a sombre-looking building might be made bright with window boxes well furnished with luxuriant plants full of flower during the summer months. The plants usually seen devoted to this purpose comprise but a small portion of subjects that might be used with effect, generally consisting of Marguerites, Geraniums, and Lobelia. These, although very attractive, and lasting in flower for a long period, might be supplemented by many other graceful and interesting plants to give a greater variety. With a little arrangement a most interesting garden, occupying but a small space, might be made, which would contain something of interest the whole year round.

The first thing is to procure a box to fit the window, as deep and wide as possible, as the space will allow. They may either be left plain and painted green, or the front may be made ornamental by nailing on pieces of cork-tree bark. This is immaterial, but it is essential that some holes should be made in the bottom of the box. Over these a good layer of broken crocks should be placed in order to ensure thorough drainage. It would also be an advantage if some rough leaves or turfy soil could be procured and placed over the crocks in order to stop the finer soil above from being washed down amongst them. It is not always possible to procure good soil in towns, but the best compost for use in the boxes would be a mixture of two-thirds good fibrous loam, with some well rotted manure and plenty of coarse sand. These should all be well mixed together before being put into the box. Each time the box is replanted it would be advisable to renew the soil in order to obtain the best results.

Among the many plants that would flourish under these conditions and come into flower in the early months of the year are: Wallflowers (single and double), Forget-me-nots, Golden Alyssum, White Arabis (double and single), Aubrietias of various kinds, and the Moss Pinks or Cushion Phloxes. Of bulbs there is a great variety—Winter Aconites, Crocuses, Snowdrops, Golden Netted Iris, Daffodils of many kinds, Chionodoxes (glory of the snow), Hyacinths, Scillas, &c. For the winter dwarf Conifers and dwarf shrubs might be used,





such as Cupressus lawsoniana, Retinosperas, and others which may be obtained from nurserymen in a small state. There are also the golden and silver foliaged Euonymus, both erect and trailing, Skimmias, which produce berries of attractive appearance, variegated Aucubas, dwarf Brooms, hardy Heaths, and the winter-flowering Daphne Mezereum. All the above would do best in a sunny position, while for a shady situation there is plenty of choice amongst hardy Ferns, like the Hart's Tongue (Scolopendrium), Polypody of various kinds, Primroses, Auriculas, with Bluebells, and Windflowers (Anemone), planted in between.

In planting the window box for the purpose of giving a succession of bloom from January onward for some months extending to May, the following might be selected. If the box is large enough, one or two small plants of the early yellow Broom (Cytisus præcox) might be put in to relieve the flatness, or any variegated shrub. Between these the following might be planted in groups: Winter Aconite (Eranthis hyemalis), which opens its golden yellow flowers in January; followed closely after by Snowdrops. In February many of the Crocuses (C. vernus vars. and C. aureus) and Iris reticulata (sweet scented, golden veined, blue flower) will come into bloom. At the front of the box Aubrietias (rose and purple) should be placed, as they will gradually grow and hang down in front, continuing in flower for many weeks during March and April. Some of the smaller Tulips like T. australis, or some of the larger garden varieties of which there is

such a vast choice, would also look well thrusting up their flowers amongst the carpeting Aubrietia. For May flowering there are the Mossy Phloxes, P. subulata and its varieties, ranging in colour

from deep rose to white.

Window boxes for summer effect require to be planted in May, when all danger of frost is over. For this purpose the plants which have been kept through the winter in the greenhouse, or which have been raised by means of cuttings or seeds, will be found useful. But as it will be found somewhat difficult to grow enough for this purpose besides the more permanent occupiers of the house, which require first consideration, if a good show is required, and expense no object, good plants in flower may be purchased cheaply. The choice of summer flowering plants that will succeed in window boxes is extensive, ranging from the wellknown and popular Marguerites and Geraniums to the free-flowering annuals like Godetias, Antirrhinums, and Stocks, and Lobelia. For a sunny window the following are suitable: Geraniums, Fuchsias, Verbenas, Paris Daisies, Tropæolums (both tall and dwarf), Heliotrope, Ivy-leaved Geraniums, and Petunias. For a more shady place there are Campanula isophylla (blue and white varieties), Mimulus luteus, and the copper-coloured M. cupreus-both of which require plenty of water -Violas, and Begonias. The Campanula is a trailing plant and will hang down the front of the box, or it may be trained over sticks to form a pyramid. Many of our small native Ferns might

be grown in shady positions and would prove most interesting. Another box might contain a small collection of Cactaceous plants, but these require the fullest sunshine, and the soil in which they are planted should consist of more than half lime rubble and broken bricks. When once planted these require little attention, care being taken that they never get too wet and have perfect

drainage.

To keep window boxes in perfect condition they require constant attention in the way of watering, at least once a day in dry weather. Evening is the best time, and a thorough soaking should be given, not merely a surface watering. The soil should be stirred with a handfork occasionally to keep it open and sweet. Dead leaves and flowers should be picked off, and the coarser growing plants kept within bounds by cutting them back, else they smother the smaller growing ones. Collections of Saxifragas and Sedums would be found most interesting, as a large number can be grown in a small space, and they are nearly all easy to grow.

CHAPTER X.

PLANTS SUITABLE FOR A COLD GREENHOUSE.

In the following selection of plants suitable for growing in pots or pans in a cold greenhouse, many will be found that are quite hardy, and will do quite well outside, but they may be utilised as well, and will be seen to great advantage, under these conditions. Many of them are of neat and compact habit, making quite interesting subjects, well worthy a place in any greenhouse. Others are taller, with attractive habit, and bear beautiful flowers that will make the greenhouse a source of great pleasure. From those included the amateur may easily make his selection in accordance with the amount of accommodation that he possesses. A common mistake is made by many people in trying to grow too many things in a small space, the result being somewhat disappointing, leading to weak and straggling plants that are certainly not a credit to anyone, besides being of little use. If the amateur will try to limit the number of plants, and grow a few things well, taking care to get a set of plants that will give a succession of





bloom spread over the greater part of the year, he will be much more satisfied with the result. Too many greenhouses are crammed full of pots, in the majority of which are apologies for plants. Of course in the spring the crowded condition of a house is excusable to a certain extent, owing to the many plants which have to be brought on ready for planting out in beds or borders outside. But once they are disposed of the house may be made to resume its normal appearance with the permanent plants. Other plants are included, which, although they will succeed in a cold house during the summer months, require a little articial heat in the winter. They will, however, well repay for the little extra trouble and expense necessary to keep them going.

ACANTHOLIMON (PRICKLY THRIFT).

These are natives of the countries round Asia Minor, and resemble somewhat in habit our native Thrift, which is so abundant on the sea shores. They are distinguished at once, however, by their prickly leaves, and long instead of round flower heads. A. glumaceum is one of the freest growers, forming close tufts of rigid foliage, and bears its rose-coloured flowers in summer. All the Acantholimons prefer a sandy loam which should have perfect drainage. They may be increased by cuttings taken off in summer, and kept in a cold frame during the winter. Quicker results are, however, obtained by layering or pegging down

the outside shoots and covering them with soil. When rooted these may be transferred to their fresh quarters.

ACHILLEA (MILFOIL OR YARROW).

This family is a large one, its various members being spread over Europe and Northern Asia. Many are useful border plants, but the best for our purpose is Achillea ageratoides, sometimes known as Anthemis Aizoon. It is a dwarf plant, 6 to 8 inches high, with rosettes of silvery leaves, and pure white flowers having a yellow centre. It grows best in gravelly soil or loam, and is easily increased by cuttings, or by division in autumn. Others worth growing in pans are A. rupestris, A. tomentosa, and A. umbellata. These are all dwarf, and bear abundance of flowers in May. A. umbellata has silvery foliage.

ACROCLINIUM. See Helipterum.

ADONIS AMURENSIS. Illustration page 29.

Owing to its flowering in winter, this hardy plant is seen at its best when grown under cover. It comes from Eastern Asia, forms tufts of finely divided leaves, above which the stems, nearly a foot high, bear the large, brilliant yellow flowers. It grows well in rather heavy loamy soil. Increased by division of the root in autumn, or by seeds which should be sown as soon as ripe. The foliage

dies down early, and the pot should be plunged in ashes in a cold frame, or outside during the summer and autumn. The double flowered variety, A. amurensis fl. pl., is a beautiful plant.

AGAPANTHUS (AFRICAN LILY).

Although these beautiful plants which come from the Cape would be too large for the small greenhouse when in flower, they may be kept in them under the stage during the winter. In spring when danger of frost is over they may be stood outside for summer effect. A. umbellatus grows between 3 and 4 feet high, with long shining green leaves, and umbels of deep blue flowers. There are many varieties, some with white flowers, and others of dwarfer habit. They should be potted in strong loam, and require plenty of water when growing, but may be dried off in winter.

ALOYSIA (SWEET VERBENA).

Is a desirable plant on account of its fragrant lemon-scented foliage. It makes a neat bushy plant of shrubby habit, and may be kept dwarf by pinching back the stronger growing shoots. Increased by means of cuttings in spring, and grows well in sandy loam.

ALYSSUM (MADWORT).

These are mostly rock and alpine plants, but some few are very useful for the greenhouse. Of these the most showy is A. saxatile, which bears sheets of golden yellow flowers in early spring. The variety citrina has lemon-coloured flowers. They are best raised from cuttings taken off in July, put in a close frame till rooted, and then potted off in autumn ready for flowering in spring. May also be raised from seeds. Smaller kinds are A. montanum with yellow flowers, and A. podolicum with white flowers. A. spinosum forms a silvery little bush with white flowers.

ANDROSACE.

This family consists of all alpine plants growing at high elevations on the Alps of Europe, and on the Himalayas. Many are difficult to grow in this country, but a few are amenable to pot culture, and make charming little plants when grown in and make charming little plants when grown in pans. One of the prettiest is A. Laggeri, which comes from the Pyrenees, where in places it almost takes the place of turf in this country. Grown in pans of sandy peat, and plunged in ashes for the summer months, it forms small tufts of deep green foliage, covered in April with numerous umbels of bright pink flowers, on stalks about 3 inches high. Also well worth growing is A. sarmentosa from the Himalayas, with resettes of sarmentosa from the Himalayas, with rosettes of silvery woolly leaves, and bright rose-coloured flowers. This plant wants loamy soil with plenty of broken sand and limestone. A hybrid between the latter and A. villosa is of neater habit, and even more free-flowering. Both may be raised



Begonia.



from seeds, but take some time to make a good plant, therefore it is best to take the offsets, and strike them like cuttings.

ANEMONE (WINDFLOWER). Illustrations pages 30 and 35.

A. blanda, the Greek Windflower, which flowers before winter is over when planted outside, is most valuable for early spring in the greenhouse. The dried roots may be procured very cheaply, and should be potted up in September. They should be covered with soil to the depth of an inch and a half, and the compost should consist of two parts loam, one part leaf mould, and one part sand, well mixed together. After potting the pans should be plunged to the rim either in a cold frame or in an ash bed, till they begin to show signs of growth. As soon as this occurs the pans may be moved into the greenhouse, and will come into flower during February. This plant grows about six inches high, with divided leaves, and lovely flowers of various shades of blue, purple, and white. Another useful member of this family is the beautiful Anemone Hepatica, with red, white, and blue flowers. It flowers very early in spring, and will grow well in stiff loam mixed with mortar rubbish. It is a native of sheltered hills in various parts of Europe and North America, and may be easily raised from seeds, which should be sown as soon as they are ripe. Our native A. nemorosa and its many varieties are well worth growing. The Pasque Flower (A. Pulsatilla), which is found

on some of the chalk downs of this country, also makes a lovely pot plant, with its leaves and flowers covered with long silky hairs.

ARABIS (Rock Cress).

One of the commonest and useful of our spring bedding plants is Arabis albida, which makes a low carpet of foliage covered with racemes of pure white flowers. Cuttings taken from plants in June strike readily in a close frame when inserted in sandy soil. These made up into pans in the autumn develop into nice flowering plants for the early spring in the greenhouse. There is also a double-flowered variety, A. albida var. flore-pleno, which is quite as easy to grow as the single one, and lasts much longer in flower.

ARMERIA (THRIFT, SEA PINK).

The Common Thrift is a well-known plant in cottage gardens and also on the sea shores of this country. It makes a pretty pot plant, lasting in flower for a long time. Other species are A. cæspitosa, a rose-coloured kind from Southern Europe, with flowers on short stems almost covering the tuft of leaves, and A. latifolia, with broad leaves and large heads of pink flowers. They are all of easy cultivation in stony soil, and are increased by division as soon as they have done flowering, or by seeds.

ARTEMISIA (WORMWOOD).

Taken as a whole, the plants of this family are of little ornamental value, only two or three of the alpine species being worth growing. A. valesiaca, A. lanata, and A. mutellina have silvery foliage, and are easily grown in stony soil.

ASPERULA (WOODRUFF).

One of the most charming little plants for growing in pans is the little Grecian A. suberosa. It is only about three inches high, and produces an abundance of rosy-pink flowers in May. For a collection of miniature plants this would be one of the gems. Another of slightly taller habit is A. hirta from the Pyrenees. Division or seeds. They like a compost of a very gritty nature, well drained.

ASPIDISTRA LURIDA (PARLOUR PALM).

A native of Japan, this is one of the most useful and ornamental plants that we have for house decoration. With ordinary care in watering, it will flourish almost anywhere, and last in good condition for a number of years. Potted in good loam it will remain good for two or three years without repotting. In time, however, the pots get full of roots, and it will be necessary to feed it with manure or divide the plant and repot it. This should be done in early summer, and as it is of rather slow growth it should not be split up

46 Aster.

into too small pieces. If the size of pot is no object it is best potted on just as it is without dividing. After repotting, the plants should be kept shaded, and should not have much water for a time, just keeping the soil moist. There are two forms, one with green, and the other with variegated leaves. To keep the leaves bright and clean they should be sponged occasionally with clean water.

ASTER.

When speaking of Asters it naturally occurs to us to associate the name with the many forms of the popular China Asters so much grown in gardens. The true Asters, however, are the so-called Michaelmas Daisies, which are so valuable for their autumn flowering properties. They, however, do not appeal to us as pot plants, and the only one suitable for this purpose is the blue mountain Daisy (A. alpinus). It is a small tufted plant growing about six inches high, with large blue flowers nearly two inches in diameter. There are also varieties with white and rose-coloured flowers. All are easily raised from seed sown in spring, or may be increased by division in autumn. The pots should be thoroughly drained, and the plants like a gritty soil. Slugs are very fond of this plant, often eating out the growing point, and preventing them from flowering the following season. There is also a variety called A. alpinus var. superbus, with larger flowers on taller stems.





ASTILBE JAPONICA. Illustration page 36.

This is a much valued plant for forcing on account of its large spikes of white flower forming a feathery mass. It is quite hardy and may be grown outside, but if wanted for culture in pots the plants must be potted up in the autumn in good loamy soil. If heat is available they may be started into growth in December, otherwise they will not start till February or March. When growing, they require an abundance of water, and should never be allowed to get dry. After flowering, they should be planted out in moist soil to make good growth ready for potting up again in the following autumn.

AUBRIETIA (PURPLE ROCK CRESS).

Well-flowered pans of the various kinds of Aubrietia are most attractive in early spring, and as they are so easily grown they form a welcome subject for the greenhouse, even if they are so much grown and common in the spring border outside. Under cover they come into flower earlier, and are not exposed to all conditions of rain and frost as are those in the border during the spring. Thus they retain their beauty and freshness for a longer period. They are all readily grown in sandy loam, or any good garden soil, and may be divided up directly after they have finished flowering. If planted out in the open ground, the pieces make large tufts by the autumn. The best kinds are A. Leichtlini, with rose-coloured flowers. A.

purpurea grandiflora, with rich violet-coloured flowers, and A. Dr. Mules with brilliant purple flowers, among many others. The closest-growing one is A. tauricola. All are most suitable for planting in window boxes, where they will make a hanging curtain of beautiful flowers.

AURICULA. See Primula Auricula.

BEGONIA. Illustrations pages 41, 42 and 47.

Of late years the tuberous Begonia has been largely used for the purpose of bedding. It may also be grown in pots for display in the greenhouse, or for the purpose of house decoration. Tubers may be bought very cheaply, but if one wishes to raise them from seed, this should be sown in a little heat in March. Use a compost of light rich soil with plenty of well decomposed leaf mould. As soon as the seedlings are large enough to handle, prick them off into small pans close together, and keep them growing on in heat. As they get bigger pot them off singly, giving them a shift on as they require it. Well grown they ought to flower during the summer. For the last shift use a compost of loam, leaf-mould, and sand, and if possible, some decayed horse manure. They require plenty of water when growing. When the plants die down in autumn, the tubers may be stored anywhere in a dry place out of reach of frost. The second year the tubers may be started into growth in a little heat in March, potting them up in fresh soil. If heat is not available leave them till later on. In

colour they range from the deepest scarlets and crimsons, to various shades of rose and pink, as well as white. Many shades of colour may be obtained from a single packet of seeds. Quite different in habit from the above are the shrubby set of Begonias, represented by B. semperflorens. They are of neat and bushy habit, and vary to a great extent, with plenty of medium-sized foliage. The leaves vary in colour from green to bronzy purple, and are surmounted by a mass of bloom, the small flowers being produced in such profusion as to almost hide the foliage. They are delightful for pots, flowering so freely, and being compact and leafy in habit. These of course would require a little heat to keep them through the winter.

BRODIÆA UNIFLORA (Spring Star-flower).

This is a plant of many names, among others being called Milla, and Triteleia. It is a pretty, free-flowering, hardy, bulbous plant four to six inches high; the flowers white with bluish tinges, and marked on the outside of the divisions with a violet streak. The plant comes into flower with some of the Squills, and remains in bloom for a long time. B. uniflora flowers freely in pots and grows well in any good soil. The bulbs are cheap and should be potted up in autumn, but they will stand for two or three years in the same pot without repotting, and flower well. The bulbs increase fast, and when the pot gets too full, they may be shaken out and divided as soon as the leaves die down.

CALCEOLARIA. Illustration page 48.

The many handsome kinds of Calceolaria are very attractive both for indoor and outdoor purposes. Their brilliant colours are most effective in the conservatory through the spring months. For the cold greenhouse the shrubby section would be the most suitable, as they are of a more hardy character. They may be propagated freely from cuttings put in during October. Select the young shoots that push up after the plant has done flowering, insert them in sandy soil in a cold frame, and keep them moderately close and moist until they are rooted. Then pot off singly as many as are wanted in small pots. Keep them in a light position in the house during winter, and give the final potting in spring, using a compost of loam, leaf mould, and a sprinkling of sand. The herbaceous kinds, of which there are many fine strains, require a temperature of 40° to keep them through the winter. Seed should be sown about the end of July in pans, in a mixture of sifted loam, leaf mould, and sand. The seeds are very small and should only be very lightly covered. Shade until the plants appear, and as soon as they are large enough to handle, prick them out a couple of inches apart in pans, using similar soil. When they have made leaves about an inch over, put them singly into three or four inch pots. During winter keep them on a shelf in the greenhouse where they will get plenty of light, and about the end of February move them into their flowering pots, using light rich soil with some manure mixed with it. Give



Campanula Isophylla.



plenty of air, but avoid cutting winds. The herbaceous Calceolarias will stand feeding with plenty of manure when coming into flower.

CAMPANULA (HAREBELL, BELLFLOWER).

Illustration page 53.

A most important family of garden plants, containing amongst its various members kinds that are suitable for many purposes. Those available for the greenhouse are numerous and are easily grown. Some of the alpine species are very charming when grown in pans, only a few inches high, and covered in spring with a mass of blue or purple flowers. C. isophylla makes a charming basket plant, or may be trained over a little trellis work. Plants may often be seen in cottage windows trained in this way, and make quite an effective display with their blue or white flowers. Other varieties of this are, C. Barrelieri, with variegated leaves, and C. Mayi, a much stronger-growing kind. All may be grown in well-drained sandy loam and leaf soil. C. garganica is a compact and tufted plant, with pale blue flowers during early summer produced in great profusion. C. garganica var. hirsuta is a more vigorous and hairy kind, with pale blue or white flowers. C. caespitosa is another kind that only grows about three or four inches high, and makes a pretty pot plant, with both blue and white flowers. One of the most free flowering is the Wall Hairbell, an evergreen kind, with violet purple flowers. It has a somewhat long name, C. portenschlagiana. C. persicifolia, the

peach-leaved bellflower, which is found in northern and central Europe, grows to a height of two feet or more, and flowers in July and August. Grown from seeds, which germinate readily in spring, they make excellent pot plants for the following year. There are many varieties, single white, single blue, also double, while some forms, like C. persicifolia var. Mærheimi, have very large flowers. It may also be propagated by dividing the plants in autumn or spring. In fact all the Campanulas mentioned are readily increased by division, or by means of cuttings in a close frame in July.

CANNA (Indian Shot).

Where handsome foliage subjects are desired, they may be obtained among the members of this family, combined with beautiful flowering plants. It is true that they would be found too large for the kind of greenhouse that we are talking about if kept in altogether, but they may be grown on in the greenhouse for a time till they come into flower, when they could either be used for the decoration of rooms in the house or stood about the garden in summer as specimen plants. As to culture and propagation it is most simple; they may be stored in winter under shelves in the house, or anywhere away from the influence of frost. In spring the roots may be pulled apart and potted up separately, using light rich soil, with rotten manure. They require good-sized pots, and plenty of water when growing. There are now many handsome kinds in cultivation, ranging from 1½



CANNA, ELIZABETH, Hoss



feet to 4 feet high, while the leaves vary in colour from green to bronze, or chocolate. The flowering season of Cannas extends over a lengthened period, but they are seen at the best during the summer months. Being somewhat gross feeders, they are helped by an occasional dose of liquid manure when the pots get full of roots.

CARDAMINE (CUCKOO-FLOWER OR LADY'S SMOCK).

Our native Cuckoo-flower is familiar to nearly every one, colouring as it does many a meadow with its pale purple flowers in spring. The most useful species for growing in pans is the Swiss plant, C. trifolia, a dense-growing alpine, with trifoliate leaves, and neat corymbs of pure white flowers on stems about nine inches high, in May. It grows freely in any moist soil well drained, and is increased by division of the root, or seeds.

CARNATION. See Dianthus Caryophyllus.

CELOSIA (COCKSCOMB).

These are Indian annuals of the Amaranthus family, and make most interesting pot plants, some with their inflorescences in the shape of a huge cockscomb. They are rather tender for the open air, but may be grown in a cool house. Seeds should be sown in March in pans, and kept near the glass to prevent the seedlings from getting drawn. As soon as they are large enough to handle they should be potted in rich soil. As they require it

they must be potted on again into larger pots, using rich soil, and giving plenty of water. If allowed to get starved or dry, the flower spikes do not develop to any size.

CERASTIUM (Mouse-ear Chickweed).

A somewhat numerous family of alpine and meadowland plants, several of which are useful for growing in the cold house. They grow readily in somewhat stony soil with perfect drainage, and are all increased by cuttings during summer, or by seeds in spring. C. alpinum is an interesting British plant, found on the Scotch mountains, and more sparsely on those of England and Wales. It is dwarf, seldom more than two inches high, with leaves clothed with a silky down, giving it a singularly shaggy appearance. It bears large white flowers in early summer, and is at all times a distinct-looking plant even in winter. C. Biebersteinii is coarser growing, with silvery leaves and white flowers in May. C. grandiflorum is less downy, but of similar habit. The South European C. tomentosum is also a compact-growing, silvery-leaved plant, with white flowers.

CHEIRANTHUS (Wallflower).

One of the most familiar occupants of gardens is the common Wallflower, in its many shades of yellow and blood-red. Less known, however, is the Madeira species, C. mutabilis, a plant of shrubby



Chrysanthemums, Ladysmith.

р. 61



Chrysanthemum, Mrs. A. Willis.

habit and useful for its winter flowering properties. It is easily grown and propagated by means of cuttings and seeds. A greatly improved form is C. Kewensis, which is a hybrid between C. mutabilis and one of the garden varieties of the Wallflowers. It has good-sized, richly coloured flowers on large bushy plants. Increased by seeds or cuttings.

CHRYSANTHEMUM FRUTESCENS (Paris Daisy, Marguerite). Illustrations pages 54, 59, 60 and 71, 65, 66.

One of the most effective window plants that we have, flowering so freely for such a long time. It is useful for many purposes, such as for planting in window boxes, bedding out, or growing on in pots. As a pot plant it forms an elegant bush, covered with its large white flowers on long stalks. There is also a form with yellow flowers, and another with double ones. These last longer in perfection than the single ones. Seedlings may be raised in spring, and grown on to make flowering plants the same year, but the general practice is to propagate by means of cuttings taken from an old plant that has been cut down, and breaks again in spring. Or cuttings may be struck like bedding plants in autumn. Plenty of water should be supplied during the whole time of flowering, and the plants would benefit if liquid manure was given to them occasionally. They like to be potted in a strong loamy soil, to which has been added some good rotten manure.

CHRYSANTHEMUM SINENSE (CHRYSANTHEMUM).

The Chrysanthemum is one of the most useful kinds of plants grown for the autumn decoration of the cold or heated greenhouse. The various kinds may be had in flower from July to December, and they may either be used for display in the open border, or grown in pots for house decoration. Propagation by cuttings or suckers may take place at almost any time, but the earlier the cuttings are taken off and struck, the sooner will the plant develop and come into flower. For good pot specimens, cuttings are usually struck in October or November in small pots. These are plunged in a cold frame in ashes during the winter, and shifted on into larger pots in February or March. In making the cuttings, good healthy shoots should be selected; these having been cut just below a joint at about three inches in length, and the eyes at the base taken out, should be inserted in sandy soil. They strike all the better if plunged in a little bottom heat, but it is not absolutely necessary. They ought to be kept close, and shaded from sun for a time. Cuttings may also be taken in February and March and treated in the same way, when they make good flowering plants by the late autumn. Suckers springing from near the surface with roots attached, afford a ready means of increase, soon forming well-rooted plants, and are preferred by many, their treatment being similar to cuttings. As the pots get full of roots the plants should be shifted on into larger sized ones, giving the final



CHRYSANTHEMUM, SOLEIL D'OCTOBRE



shift into their blooming-pots about the end of June. Chrysanthemums require a rich and loamy soil, a good compost being for the final potting, two parts loam, one of leaf mould, and one of well-decomposed cow manure, with a good sprinkling of sand to keep it open and porous. A good manure is bone meal, which is used by many, but other well-known fertilisers are beneficial when they are

forming their flower buds.

Water should be given freely, for the plants should never be allowed to get dry, and they often want watering two or three times a day in warm dry weather. Syringing overhead night and morn-ing is also recommended. Staking should also be attended to in good time, and the plants encouraged to make sturdy growth by keeping them well away from each other. To make the plants bushy, the leader should be pinched off when it gets about six inches high, and the resulting shoots again pinched after a time. Pinching should not take place after July, as it would then interfere with the flower buds. The plants should be moved into the cool greenhouse in September or October, when they are showing flower. Here they require plenty of air when the weather is favourable and also plenty of water. After flowering the plants may be cut down and stored away in a cold pit or frame for the purpose of providing cuttings.

If large flowers are desired it will be necessary to thin out the buds, leaving only one at the end of each stem. Extra large flowers are produced by allowing only one or two on each plant, and feeding well with liquid manure when the buds are formed.

Such a large number of varieties are in cultivation, of equal merit, that a list of names would be superfluous.

CINERARIA (SENECIO CRUENTUS).

Well-grown plants of Cineraria are always attractive and useful, coming at a dull time of the year, when there is little else. They may be readily grown in a cool, somewhat damp, house, and they will not bear forcing. To have them in flower at the end of the year when they are most useful, the seed should be sown in March. Sow in well-drained pans and use a mixture of three parts loam, two parts leaf soil, and one sixth sand; press the soil firm and water with a rose to settle the whole. Sow the seeds thinly, and cover slightly with a thin layer of fine soil. Keep the pans in shade and do not over water them. After the seeds have germinated keep them moist, and put them where they will receive light and little sun. When large enough, pot them off singly in similar soil, and keep them shaded for a few days. They may be grown in a frame facing north which is most suitable, but if not available, they can always be shaded from sun. When the pots get full of roots pot them on at once, giving a final shift into 6-inch pots, which will be large enough for all purposes. When these get full of roots, liquid manure should be applied occasionally, and all that will be neces-

Japanese Chrysanthemum.



Chrysanthemum (various).

sary then will be to keep them regularly attended to with water, air, and shaded from bright sun. When there is danger of frost the plants must be moved inside and they will be in bloom by Christmas in a temperature 40 degrees at night, with a little more warmth by day. There are many fine strains in cultivation, and a great variety may be obtained from one packet of seeds.

Insects.—The green fly is very partial to Cinerarias, and to keep them from getting established the plants should be frequently examined. The insects can be destroyed by fumigating, but this should be carefully done. A better plan is to dip the whole plant in tobacco water when the fly is

detected.

CONVALLARIA MAJALIS (LILY OF THE VALLEY).

With a little trouble this favourite flower may be obtained in bloom in pots before those outside. The crowns should be potted up in October, selecting only the strongest ones, and any good garden soil will do for them. They should be about an inch apart in the pot. After potting the pots should be covered with ashes outside. When the crowns show signs of growth, they may be brought into the greenhouse, placing an inverted pot over them till the spikes show above the leaves; afterwards they may be gradually exposed to the light. Suitable crowns for this purpose may be obtained cheaply from any nurseryman. After flowering, the plants may be planted out in a suitable place in

the garden border, as they do not produce flower the second year in pots.

CYCLAMEN (Sowbread). Illustration page 72.

The Cyclamen is a valuable and delightful winter and spring flowering plant, and while the largeflowered florists' varieties cannot be grown to perfection without a little heat, there are several charming little species well worth cultivation in pans. If the greenhouse can be kept up to a heat of 50 degrees during the winter months, the large-flowered kinds may be grown successfully. Seeds are usually sown in November or December, in pans which should be prepared by putting plenty of broken crocks at the bottom, and then filling up with an equal mixture of fine loam and leaf soil, in addition to a little sharp sand. Slightly cover the seed, and put the pans in a temperature of 50 degrees, and as soon as the seedlings appear, place them near the light to prevent their being drawn. In spring put the seedlings singly in 3-inch pots, shading slightly from bright sunshine. By the middle of summer they will have filled the pots with roots, and may now be put into their flowering pots—5-inch. Keep them close for a time, and also shaded. In potting do not cover more than three parts of the corm, as if covered with soil the flower buds often damp off while pushing through. Give plenty of water during summer, with sufficient air and shade; syringing also overhead in the afternoon will keep down thrips and red-spider, which

often attack these plants. During winter the plants require a light place, with plenty of air, in a temperature ranging from 45 degrees to 50 degrees. They will then flower in February or March. After flowering, they may be placed outside in a frame and gradually ripened off by withholding water. In autumn they will start again, and will want potting on into larger pots, treating them in the same manner as through last winter. They will bloom earlier and more profusely the second year. There are also hardy Cyclamens that require no heat whatever to grow. Of these the Caucasian C. ibericum comes into flower about Christmas, with flowers varying from deep red-purple to rose, lilac and white. The round-leaved Cyclamen, C. coum, is also perfectly hardy, and is often in flower outside before the Snowdrops. In pans, with the shelter of the cold greenhouse, it comes into flower in January, and lasts in perfection till March. They may both be raised from seed in the same way as the larger flowered forms without the addition of heat. The corms should be potted up in pans with three or four in each, in a mixture of about one-third good loam, one-third leaf soil, and onethird of well-decomposed cow manure and sand. The corms should be covered with soil. They will grow and flower in the same pans for two or three years without repotting. After flowering, the pans should be plunged in ashes outside, to give the corms a good ripening off when they lose all their leaves, bringing them into the house again in autumn,

when they start growing. A later spring flowering species is C. repandum, with larger flowers, varying in colour from rose to white.

CYPRIPEDIUM (LADY'S SLIPPER).

These handsome Orchids, of which there are several perfectly hardy species, may be successfully grown in a cold greenhouse. The most essential conditions they require are shade and moisture while in full growth, and a border on the north side of a wall would be suitable in which to plunge the pans during the summer months. Cypripediums are not easy to raise from seed, and it would be necessary to buy roots for potting. Fair-sized pans would be required, using a compost of half loam, and half peat, with the addition of leaf soil and sand. The most beautiful of the group is C. spectabile (Mocassin flower), which grows about 18 inches high, with white flowers, having a blotch of bright rosy carmine on the lip. It grows naturally in open boggy woods in North America, and each stem bears two or more flowers on them. Another handsome kind is C. macranthum, the Siberian species, with large purplish rose-coloured flowers with deeper coloured veins. They both flower during May and June, lasting in full beauty for some time. After flowering, they should be moved out of the greenhouse, back to their shady quarters under the north wall, where they will require little attention except to keep them moist.



Senecio Morei.



DIANTHUS (PINK, CARNATION, ETC). Illustrations pages 77, 78.

The Dianthus family is a most valuable and important one, and provides many kinds of flowering plants, suitable for the cold greenhouse. Among the "Pinks," which are derived from D. Plumarius, a south European plant which is now naturalised in parts of this country, there are many beautiful varieties. The Carnation also makes an exceedingly useful pot plant, and may be had in flower both during summer and winter. Among the wild alpine Pinks there are several well worth cultivating, and as they do not take up the room required for Carnation growing, they are more suitable for a small house. And they certainly give an equal amount of pleasure when successfully grown. One of the neatest and prettiest is the Cheddar Pink (D. cæsuis), which makes a dwarf carpet of glaucous foliage, and bears fragrant, rosy-coloured flowers in spring. It likes plenty of lime rubbish mixed with the soil in which it is potted, and is never so happy as when growing on an old wall. Other dwarf growing species are D. arenarius, with white delicately-fringed petals; D. callizonus, a lovely species from Transylvania, with large rose-coloured flowers; D. alpinus with large, solitary, deep rosecoloured flowers; and D. neglectus. All like very sandy and gritty soil, with thorough drainage, and flower in April and May. They may be raised from seed sown in a cold frame in spring, or by means of cuttings in July. The seeds should be

sown in a mixture of loam and lime rubbish, finely sifted. When large enough pot off singly in the same kind of soil. Cuttings will strike freely in a close frame and make plants quicker. D. Plumarius, the parent of the numerous varieties of Pinks so much grown as border plants, has single purple flowers, deeply cut at the margins. It also makes a pretty plant for pans owing to its free-flowering nature. The Carnation is derived from D. Caryophyllus, and the varieties are extremely numerous. It thrives best in good loamy soil of a rich nature. It may be propagated by seed, layers, or cuttings. Layering is the usual method and is performed about the end of July. Light sandy soil should be spread around the plant, and each shoot is cut half way through a little below the third joint from the top, and the knife having been slightly inclined to one side, an incision is made along the middle of the shoot for the distance of half an middle of the shoot for the distance of half an inch, so as to form a tongue. The layer is then bent down, and fixed in position by a peg, afterwards being covered with soil. After this the layers require to be watered occasionally with a fine rose. About the end of September they will have made roots, when they can be severed from the plant close to the joint where they were layered, and potted singly into 3-inch pots. Use plenty of drainage and pot firmly, and keep the rooted layers in a close frame for a time after potting. During winter the plants may be kept in a cold frame winter the plants may be kept in a cold frame with plenty of air whenever the weather is favourable, and it would be best to have the pots plunged

to the rim in ashes. In March they should be put into their flowering pots, and grown on to flower during the summer. Staking should be carefully attended to, and the plants would also benefit by a top dressing of manure in May and June. The winter flowering, or Tree Carnations, are coming into favour on account of their great value for cutting in winter. Cuttings are struck in a little heat in spring, grown on in a cold frame, or outside in summer, shifting them into larger pots as they require it. The final shift should be into 6-inch pots in September, shading for a time and syringing occasionally. They may be put in the cold green-house in October, and will soon commence to flower, continuing through the winter and spring months. A little heat is beneficial, but not absolutely necessary if frost is kept out. In case of mildew, sulphur should be sprinkled on them, and for green fly the plants should be washed with soft soap and water.

DICENTRA (BLEEDING HEART).

A family of graceful plants belonging to the Poppy family, of which there are several handsome kinds. Amongst herbaceous plants D. spectabilis is one of the most beautiful, its exceedingly graceful habit, and its delicate rose-coloured flowers make it a charming decorative plant for the greenhouse or conservatory. It is also useful for cutting, the long branches of pendent flowers making them peculiarly suitable for vases. The roots should be potted up in late autumn in rather stiff loamy

soil, and as the plant is hardy it need not be brought into the greenhouse till it has commenced to grow outside. The best way to keep it through the winter outside is to plunge the pot in ashes, so that there is a layer of a couple of inches over the top. With handsome Fern-like foliage, D. eximia is a most attractive plant, even when not in flower. While D. spectabilis often reaches a height of 2½ feet, D. eximia is dwarf and compact in habit, with reddish-purple blossoms in long drooping racemes. They are both increased by dividing the roots any time while the plant is at rest. When they commence to grow in spring, the plants should be moved into the greenhouse and given plenty of water while growing.

DIONÆA MUSCIPULA (VENUS' FLY-TRAP).

This interesting plant, which is one of the most singular plants in cultivation, is always attractive, owing to the leafy lobes which close up when slightly irritated. These lobes are clothed with long hair like teeth on the edges, and when a fly alights on the inside, the lobes come together and the teeth prevent escape. The fly is digested by means of a juice present in the form of little glands all over the surface. After a time the lobes open again ready for another victim. This plant can be easily grown in a cool house, provided that it is kept moderately close under a tilted bell glass. The flowers are white and produced in July, but are not attractive. It should be potted in fibrous



Carnation, Alpine Glory



Carnations: (1) Lady de Ramsey. (2) Morning Glory.

peat, with chopped sphagnum moss and sand mixed with it, and should have abundance of water when growing.

DRABA (WHITLOW GRASS).

Of neat and compact habit, many of the Drabas make excellent plants for growing in pans. They only grow a few inches high, forming small rosettes of leaves close to the ground, and bear white or yellow flowers. D. aizoides is a native of this country, being found on some of the northern mountains. The flowers are a bright yellow, and are produced in clusters, quite covering the foliage during March and April. D. aizoon is rather larger than the last, with smaller yellow flowers. D. mawü, from Spain, forms cushion like tufts, covered in March with white flowers on stalks about two inches high. They are all readily increased by means of seeds, which they ripen freely. These should be sown early in spring in a covered frame, and the seedlings pricked off into small pots as soon as large enough to handle. Very sandy soil suits them best, and they like plenty of sun.

DROSERA (SUNDEW).

For the amateur who likes interesting plants apart from flowers, the Sundews are worth attention. They are little bog plants, several of which are natives of this country. All are characterised by tufts of leaves which have their surfaces covered

with glandular hairs. They may be grown in pans, which should be half filled with peaty soil, and then filled up with Sphagnum moss. Moisture is very necessary, and the pans may be stood in saucers which should be kept filled with water. The British kinds are D. longifolia (long-leaved), D. rotundifolia (round-leaved), and D. intermedia.

DRYAS (Mountain Avens).

The Mountain Avens is found on some of the higher English and Scotch Mountains, and is a member of the Rose family. It is of spreading growth and neat evergreen foliage, covered in May with a profusion of pretty white flowers. It is a good pot plant and well worth growing. Light stony soil is most suitable, for then they do not grow too rank, and will last for years in the same pan, and flower annually. When too large, the plants may be divided in early spring. The two best kinds are our native D. Octopetala, and the North American D. Drummondi, with yellow flowers. The white one has the largest flowers, approaching two inches in diameter.

EDELWEISS (LEONTOPODIUM ALPINUM).

The Edelweiss is probably one of the most popular plants by name, although not commonly grown. Its culture, however, is easy, and it may be grown successfully in or near large towns. A pretty and hoary-leaved plant, the small yellow

flowers are surrounded by starlike heads of leaves clothed with a dense white woolly substance. It is found at high elevations on the Alps of Europe, and is also found on the Himalayas, and on the Siberian mountains. It is one of those plants that frequently die after flowering, and is best raised annually from seeds in spring. These should be sown in a covered frame in pots, in a mixture of sandy loam and mortar rubbish. As the seedlings get large enough pot them off in similar soil, and keep them growing in a cold frame. They will be large enough to flower the following spring. If the pots or pans are plunged in ashes the plants do not require much or any watering during winter. A certain percentage of seeds are ripened, and to keep up a stock of this plant, it is necessary to sow some every spring.

EGG PLANT, See Solanum.

ERIGERON (FLEABANE).

Daisy-like plants of dwarf habit and purplish flowers, the majority of these are more suited for the herbaceous border. One species, however, is worth growing in pans—E. alpinum from the European Alps. It grows about six inches high, of neat habit, and rosy-purple flowers in late summer. It ripens seed freely, and grows well in sandy loam, lasting a long time in flower.

ERNIUS ALPINUS.

A pretty little wall plant, with small leaves and spikes of rosy-purple, or white flowers, six inches long. It is a native of the Pyrenees, and is most at home growing on old walls. If grown in pans, these should be filled mostly with broken bricks and lime rubbish. Seeds are ripened freely and germinate readily. It is quite hardy, but dislikes wet in winter.

ERODIUM (STORK'S BILL).

This is a somewhat large family closely allied to Geranium. Several of the different kinds are most suitable and useful for pot work in the cold greenhouse. Some are worth growing for their handsome silvery foliage alone. E. macradenium is a charming dwarf Pyrenean plant six to ten inches high, with purplish-rose flowers, having a distinct black spot on the upper petals. E. trichomanefolium has finely-cut, fern-like leaves, and flesh-coloured flowers. E. chrysanthum has silvery foliage and bright yellow flowers. They are all increased by division, or seeds, the latter ripening freely, and like a rich and light well-drained soil. E. chamædryoides is a miniature species, with a cushion of leaves close to the ground, from which arise slender stalks each bearing a solitary white flower. It often remains in bloom for many weeks.

ERYSIMUM.

Wallflower-like plants of small stature, several of









Petunia.

p. 120

which are admirably adapted for pot culture. E. ochroleucum, sometimes known as Cheiranthus alpinus, is one of the most handsome, forming neat rich green tufts of leaves, from which arise the stems bearing spikes of beautiful sulphur-coloured flowers in spring. For pot work cuttings are best, these being inserted in a close frame in sandy soil in July. After they are rooted, pot on and they will make nice plants for flowering the following spring. They do well in sandy soil, mixed with leaf mould. A very dwarf species is E. pumilum from the Alps and Pyrenees. It grows about two inches high and bears very large flowers in proportion to its size. E. rupestre forms a low, cushion-like tuft, covered in spring with clear yellow flowers. It is increased by division in autumn or spring, or by means of seeds.

FRANCOA (Maiden's Wreath).

Attractive Chilian plants of the Saxifrage family, with long branching stems 18in. to 2ft. high, bearing numerous white or pink flowers. They are very good in a cut state for house decoration. Plants may be raised from seed sown in spring, and should be potted in rich light soil of a loamy nature. They may also be kept from year to year, but are apt to get straggly in time, so that it is advisable to raise them fresh from seed, or divide the crowns. This may be done in spring. F. ramosa makes a rosette of large leaves, and bears

white or pale pink flowers from July to September. F. appendiculata does not produce a stem like the above, and bears rosy-purple flowers. They are often grown as window plants, and are admirably adapted for this purpose. Almost hardy, they will stand outside during the winter if planted in a sheltered position.

FUCHSIA.

There are few more graceful plants than the Fuchsia, and as a decorative plant it would be difficult to surpass it. It is so easy to grow, and is not at all particular as to soil and situation. Its continuous flowering habit is one great advantage, for it may be had in bloom for three parts of the year, either in small pots, or trained along rafters. For bedding outside there are several kinds that will bear a profusion of flowers till cut down by frost. As a pot plant for the greenhouse it takes the first rank. The Fuchsia is a native of South America, whence it was introduced into this country in the early part of last century. From these have been produced the many fine varieties that we have now. Fuchsias may be raised from seed, but the usual method of increase is by means of cuttings. These strike readily at any time of the year, when shoots can be obtained that are not showing flower. The best plan is to start the old plants in early spring into growth, and as soon as they have pushed up shoots a couple of inches long, to take them off and put them in small pots

in sandy soil. These pots should if possible be placed in a close frame, or under a bell glass in the greenhouse. When rooted, they should be potted up singly into small pots, and kept close, and shaded from bright sunshine for a time. They will grow rapidly if well attended to with water, and will soon want moving into larger pots. To make the plant bushy, stop the leading shoot at about four or five inches long, and also the side ones when produced. By midsummer they should have made good plants and commence to flower. Fuchsias may be kept through the winter almost anywhere out of reach of frost, and underneath the greenhouse is most suitable. If the old plants are required for the following season, they should be pruned back in spring after resting all the winter, all the soil shaken off their roots, and repotted in fresh soil. Although larger they never make such nice plants as do the cuttings. The soil most suitable for Fuchsias is three parts fibrous loam, and one part leaf mould, rotten manure, and sand. They are much subject to green fly and red spider, which insects may be kept down by syringing with insecticide occasionally.

FUNKIA (PLANTAIN LILY).

These are all handsome foliage plants, the majority being more suitable for the herbaceous border. Mention, however, might be made of one species, F. subcordata, which would be worth growing in a pot as it does not do well outside, except in most

favoured situations. It has broad green leaves, and stems bearing numerous large, handsome, pure white flowers, sweetly scented. It likes strong loamy soil.

GENTIANA (GENTIAN). Illustration page 83.

Many of these are charming little plants, some of which are difficult to grow in the border or rock garden, but which may be grown in pans with the shelter of a cold frame. G. verna is one of the most beautiful of alpine flowers, and is frequently met with growing in mountain pastures, but is difficult to keep in good condition outside during our hot dry summers. It may be grown in pans potted in sandy soil, and kept very moist in a somewhat shady position. All the Gentians may be raised from seed sown as soon as it gets ripe on the plant. If kept till the following spring it will often lie for twelve months before coming up, or frequently fail altogether. Seeds should be sown in a close frame, and should be kept moist till they germinate. Pricking off the seedlings into pots or boxes should be done carefully, as they do not like being disturbed, and take some time to get over it.

GERANIUM (CRANESBILL).

The name Geranium is usually associated with the popular class of bedding plants, the correct name of which is Pelargonium. Geraniums are usually stout perennials, and natives of the woods and fields of Europe and this country, but one or





Primula (cortusoides fimbriata oculata.)

two are dainty alpine plants suitable for growing in pans for the cold greenhouse. G. argenteum grows about six inches high with silvery leaves, and pale purple flowers with deeper veins. G. cinereum has greener leaves and flowers similar in colour, but larger. G. subcaulescens has large rosypurple flowers. All are easily raised from seed, or increased by division in spring. They like a sandy or stony soil well drained.

GEUM (Avens).

Several of the members of this family are neat and compact-growing plants, well adapted for our purpose. G. montanum is one of the best of the dwarf yellow-flowered kinds, with leaves lying close to the ground, producing an abundance of erect stems, and bearing clear yellow blooms during the spring and early summer. There are more robust varieties of this in cultivation with larger flowers, but the typical wild plant is the most charming. G. reptans differs from this by its finely cut leaves and large, more numerous yellow flowers. They are both increased by seeds or division, and like a well-drained sandy soil.

HELIOTROPE (HELIOTROPIUM PERUVIANUM).

The Heliotrope is a great favourite with most people on account of its delicious fragrance and has been given the common name of "Cherry pie." It is a welcome plant in any greenhouse, and is also used largely for bedding out in summer. In

heated conservatories large specimens trained up walls and pillars are frequently met with which supply an abundance of sweet-scented flowers during the greater part of the year. Heliotrope is usually propagated by means of cuttings either in spring or summer. For pot plants, cuttings should be taken in July or August, and put into pots in a light sandy soil. In a close frame these will root freely. As soon as they are rooted they may be potted off singly in small pots, in which they will stand through the winter, in a house where the temperature is kept above 40 degrees. In spring the plants require to be shifted into larger-sized pots in which they will flower with great profusion during summer. The soil most suitable is a mixture of loam, peat, and well-decomposed stable manure. For bedding out plants, cuttings are usually struck in heat in spring, and grown on rapidly, ready for planting out at the end of May. Heliotrope may also be raised from seed and will flower the same year.

HELIPTERUM (RHODANTHE).

Charming half hardy annuals from Australia, valuable for winter bouquets, as they are everlasting. H. roseam is of slender growth I to I½ feet high, with glaucous foliage. The fine rose-coloured flowers have a yellow centre in the typical plant, but there are several varieties; one, var. alba, with silvery bracts; another, var. maculata, with larger flower heads which have a dark band at the

base of the flower bracts. These annuals are largely used as pot plants, and grown for sale in the markets. Seeds are sown in the 5-inch pots in which they are to flower, early in spring, and if they come up too thick are well thinned out. Treated in this way and grown in sandy soil, they make charming pot plants, and last for a long time in perfection.

HEPATICA. See Anemone.

HENCHERA (ALUM ROOT).

The Hencheras are closely allied to the Saxifrage or Rockfoil family, and are mostly natives of North America. Some of the many kinds are of exceedingly graceful habit, although individually the flowers are small. In others the leaves are most ornamental, with rich colouring in autumn and winter. The most beautiful species of all is H. sanguinea, which when seen in quantity has a charming effect. It has a neat and bushy habit, with lobed leaves, and numerous loose and graceful flower spikes about one foot high, covered with bright red blossoms. It is excellent as a pot plant, and will grow in any good garden soil. A summer flowering plant, it may be increased by dividing the roots, or by means of seed. H. Micrantha grows taller, with a feathery panicle of smaller flowers.

HIERACIUM VILLOSUM (SHAGGY ALPINE HAWK-WEED).

The members of this large and well-known

family are not as a whole looked on with much favour for garden purposes. H. villosum, however, is one of the largest, as well as the showiest, of the yellow-flowered species. The whole plant is covered with long shaggy hairs, giving it a silvery appearance, while the large flowers, fully two inches in diameter, borne on hairy stems, render it a most attractive object. It is readily raised from seed which may be sown in pots in a cold frame, or in heat in March. Potted off as soon as the seedlings are large enough to handle, and afterwards put three or four together in a pan about seven inches in diameter, they make a bright display during the summer months. It is found in abundance on the European Alps.

HOTEIA. See Astilbe.

IBERIS (CANDYTUFT).

The Candytuft is a well-known and favourite plant, greatly used for spring bedding, borders, and for the rock garden. The perennial kinds are mostly somewhat shrubby, and evergreen. With the exception of one or two species they are all hardy, but owing to their neat habit and free-flowering qualities they are excellent as pot plants. Of the tenderer kinds I. gibraltarica is easily the most beautiful. It is larger in all its parts than the other species, and is valuable on account of its flowering during the winter. A native of southern Spain, it grows about 18 inches high, with large





heads of lilac or white flowers. As it does not set seed in this country it is increased by means of cuttings. These strike readily in July, and if looked after and potted on as required they make nice little plants by the end of the year. If potted on again during the next season they make much larger plants, and will give an abundance of bloom during the following winter and spring. I. semperflorens is a shrubby plant with dense heads of white flowers from the Mediterranean region. It keeps on flowering for a great part of the year. Others worth growing in pans are I. corræfolia and I. sempervirens.

IONOPSIDIUM ACAULE (VIOLET CRESS).

As a winter flowering plant in the shelter of a cold house, this charming little Portuguese annual is most interesting. It is not an effective plant, being only two inches high, with tufts of leaves and numerous violet flowers. Seedlings potted up in autumn go on flowering all through the winter and spring. Outside in the border or rock garden it sows itself freely, sometimes producing two or more crops in one year. It will flower within a couple of months after being sown, and will grow in almost any soil, preferring a damp stony situation.

IRIS (FLAG).

The Iris family contains some of the most beautiful plants grown, while the flowers are wonderfully varied in form and colour. The flowering season

roo Iris.

of the different kinds extend from late autumn, when the Algerian Iris blooms, through the winter, to the middle of summer. They may be conveniently divided into two great sections-those with creeping stems (rhizomatous), and the others with bulbous roots. All those mentioned below belong to the rhizomatous section, while the bulbous ones, which are exceedingly valuable for pot work are to be found described with other bulbous plants in another part of this book. The majority of those with creeping stems, of which the well-known German Flag is typical, are somewhat too large for pot culture. So that we must confine our attention to the smaller kinds belonging to the section called I. pumila. This is the best of the dwarf Flags, for to it we owe the many beautiful forms that flower in early spring. It grows from 4 to 8 inches high, with large flowers, varying in colour from deep violet to sky-blue and white. Another worthy kind is I. chamæiris, with pale golden yellow netted flowers about 6 inches high. They are all of easy culture and will grow in almost any good garden soil. The rhizomes should be potted up some time in the early autumn, so that the pans are well filled with roots before the commencement of winter. The most suitable soil is half loam, one fourth sand, and one fourth broken up mortar rubbish. Attention should be given to the drainage, as Irises dislike sour or stagnant soil. When potted up the pans should be plunged to the rim in ashes outside, or in a cold frame where plenty of air is given. They must be watered

Iris. 101

carefully for a time, and should have a light sunny place. In addition to the kinds mentioned there are many others of dwarf habit, and great beauty worth growing. There is the North American crested Iris (I. cristata), only a few inches high, with flowers of a delicate blue, and richly marked. Iris biflora, about a foot high, with large violet flowers, is a lovely free-flowering kind. They may be had in flower before those outside by putting them in a warm sunny frame or greenhouse, but they must not be subjected to fire heat to any extent. As soon as they have finished flowering, they may either be planted out in the open ground, or left in their pans for another season. In the latter case they ought to be kept plunged and well watered during the growing season. For larger houses where there is ample room, some of the larger kinds might be grown, and would make an effective display before those outside came into flower. They would, of course, want larger pots, but the same treatment as the smaller ones.

The propagation of all the rhizomatous Irises is very simple, for the rhizomes may be taken up and divided into single crowns at almost any time of the year. The best time, however, is just after they have done flowering in June or July. They then have time to make fresh roots and get established before winter sets in. In dividing the underground stems of Iris, a portion some two inches or more long should be left on with each crown, which will generally have several roots attached to it. In planting, the thick portion of the root should

102 Leontopodium Alpinum—Linum.

be just covered with soil, for these plants dislike being buried too deeply. Seeds form another method of increase, and as seeds are ripened pretty freely on many species, a stock may soon be obtained. They should be sown as soon as they are ripe, and will often germinate the same autumn, but usually in the following spring.

LEONTOPODIUM ALPINUM. See Edelweiss.

LINUM (FLAX).

Among the members of this genus are several graceful and elegant plants of great value. L. arboreum, which comes from south Europe, and is scarcely hardy outside except in favourable situations, makes a pretty little evergreen bush 12 to 18 inches high. It has large yellow flowers which are produced freely in summer. It is well adapted for pot culture, growing freely in loamy soil with plenty of sand mixed with it. A similar kind is the handsome Linum flavum (or as it is sometimes called L. campanulatum). This is a perennial, with stems over a foot high and large yellow flowers. L. monogynum (New Zealand Flax) is a beautiful kind with large pure white flowers produced during the summer. It grows about 18 inches high, and is of neat and slender habit. Among the alpine kinds there is L. alpina, a dwarf-growing kind about six inches high with blue flowers. And L. salsoloides, a dwarf shrubby species, growing on



Primula Sinensi Alba.



the mountains of Europe, which has white flowers having a purple eye. Most of these kinds produce seeds, and all may be increased by cuttings of the short shoots taken off during July. They strike freely, and will make nice plants by the following summer. These plants are all sun lovers and like well-drained soil.

LOBELIA.

Most people are familiar with the little annual Lobelia (L. Erinus), which is used so extensively for bedding out purposes. Some of the finer varieties are admirably suited for growing in small pots for standing in the front row on the stage. They may also be grown in this way ready for planting out in window boxes when the season is favourable. The Lobelia thrives well in equal parts of sandy loam and leaf soil, with enough sand to keep it open. To keep Lobelias in full beauty for a long time it is necessary to go over the plants frequently, and cut off all the seeds, which are produced very freely. They may be propagated by seeds, or division of the root in spring. Increase by cuttings, or potting up a few old plants in the autumn is the best method of preserving and increasing special varieties that have been planted out in window boxes. Cuttings taken off these old plants strike freely in a little heat in spring. A handsome kind with large lovely blue flowers is L. triqueter, which grows about a foot in height. Seed of this should be sown in

106 Lychnis—Mesembryanthemum.

March, and the seedlings potted on as soon as they get large enough. Several should be left in each pot in order to make a more effective plant. It will grow in almost any good garden soil.

LYCHNIS (CAMPION).

Plants of the Pink family, some of the alpine species of which are very attractive and free flowering. L. alpina is a diminutive form of the German Catchfly (L. Viscaria), which is much grown in herbaceous borders. It forms tufts only a few inches high, with heads of rosy-purple flowers. A perennial, it grows freely in very sandy or stony soil, and may be increased by seeds or division in spring. A lovely dwarf alpine plant is L. Lagascae, which forms a spreading tuft of stems and foliage close to the ground, and bears a profusion of bright rose-coloured flowers in spring and early summer. Owing to its compact habit it is well suited for growing in pans, and makes a most charming little plant. It likes sandy or stony soil, and should be grown in full sunshine. Increased by seed sown in spring. It is not advisable to keep this plant after flowering, as it is never so satisfactory during the second season. L. pyrenaica is similar in habit to the above, but with white flowers.

MESEMBRYANTHEMUM (Fig Marigold).

One of the most extensive families of Cape plants, containing many showy species well suited for growing in pots or pans. Though they are not

all hardy they will stand a few degrees of frost, and in some places round the coast they grow luxuriantly on rocky terraces, making a brilliant blaze of colour in summer. But while seen at their best under these conditions which the town dweller cannot give, many kinds make effective plants when grown in well-drained soil in a cold house. Old plants do not flower so freely as young ones, and as they strike readily from cuttings in summer, young plants should be grown on and the old ones thrown away when two or three years old. During winter the soil in which the plants are growing should be kept rather dry to stop growth and give them a rest. For a sunny window box where they can hang down the various kinds of Mesembryanthemum are most effective. They like stony or sandy loam. Some of the most showy kinds are M. conspicuum, M. barbatum, M. reflexam, M. roseum, M. blandum, and M. spectabile, among numerous others. Belonging to this genus is the Ice plant (M. crystallinum).

MIGNONETTE (RESEDA ODORATA).

Seeds of this favourite annual should be sown in March in boxes or pans in a mixture of rich light soil. When the seedlings are large enough, pot them up 4 to 6 in a pot together. To avoid disturbing the plants seeds may be sown thinly in six inch pots, and the seedlings thinned out to the required number as they come up. For this use a mixture of good loamy soil, leaf mould, and sand.

Give them plenty of air and water while growing. There are now some very fine varieties of Mignonette in cultivation with very large heads of flowers.

MYOSOTIS (FORGET-ME-NOT).

Several members of this charming family of alpine as well as lowland plants are well adapted for growing in pots or pans. In contrast to our native water Forget-me-not (M. palustris), which is of rather straggling habit, some of the mountain species are of very dwarf and compact habit. M. alpestris is an exquisite plant, forming a low cushion covered with flowers of the loveliest blue in spring. It is easily raised from seeds sown in spring or early autumn. As the typical plant does not get more than a few inches high, it is necessary to put several together in a seven inch pan. They like a moist gritty soil, well drained, with plenty of water when growing. There are a great many improved varieties of this plant of various colours, ranging from blue to rose and white. Autumn raised seedlings make nice plants and flower early the following spring. They may be grown during the winter in a cold frame to which plenty of air should be given. M. azorica is a beautiful kind from the western Azores, growing about 6 to 9 inches high with deep blue flowers. M. Rehsteineri is a bog plant, growing close to the ground, covered in April and May with light blue flowers. Plenty of moisture is essential for this species at all times.



Salvia Splendens.



NERTERA DEPRESSA (FRUITING DUCKWEED).

A most interesting New Zealand plant, that is remarkable for its resemblance to the Duckweed of our stagnant ponds. Potted up in a mixture of loam, leaf soil, and sand, it forms a densely matted tuft. The flowers are inconspicuous, but are succeeded by orange red berries, which are studded all over the plant, and make a charming display for a long time. Cuttings strike readily in a mixture of leaf mould and sand in summer, if kept close for a time under a bell glass. A plant for those who like uncommon things.

NICOTIANA (TOBACCO).

While the ordinary Virginian Tobacco (N. Tabacum) is much too large for pot work, there is a smaller growing kind that is eminently adapted for growing in pots for the decoration of the rooms for growing in pots for the decoration of the rooms of a dwelling house, or for the cold greenhouse. This is the sweetly scented N. affinis (N. alata), which is so largely grown for summer bedding in most gardens. In addition to this white-flowered species there is also the hybrid N. Sanderæ, with flowers of various shades of pink and purple. Both are readily raised from seed in spring, especially if sown in a little heat. The seedlings should be potted up singly in small pots as soon as they are large enough to handle, and should be moved into larger pots as they require it. A compost of rich larger pots as they require it. A compost of rich loam, leaf mould, and sand should be used for potting, and the plants must not be left in the

small pots too long, else they get starved, and the bottom leaves turn yellow. During the summer months the fragrant flowers will be produced freely, but are only open fully in the evening. To prolong the flowering season all seed pods should be removed as the flowers die. As the pots get very full of roots, some artificial manure would be beneficial while the plant is in full growth and flowering.

ONOSMA (GOLDEN DROP).

Uncommon but beautiful plants of the Borage Order, of which O. echioides is amongst the most showy of hardy flowers. It is an evergreen perennial that frequently dies in winter when planted outthat frequently dies in winter when planted outside, but succeeds perfectly well in a pot which is kept in a cold frame. Lights must be kept over it in wet weather, as it is very susceptible to damp. It is a native of southern Europe, and grows about 6 to 12 inches high, bearing during summer drooping clusters of golden-yellow flowers, which have obtained for it the name of "Golden Drop." It may be grown in good sandy loam mixed with plenty of broken grit, and will stand and flower for two or three seasons in the same pot without reporting. It is only necessary to pay attention to repotting. It is only necessary to pay attention to the drainage and give it a little top dressing in spring. It may be increased by means of seeds or cuttings, the latter being taken off in July, with a small piece or heel of the old stem. These should be put in sandy soil and kept under a bell glass or close frame. Similar to this in habit, but with white and rose coloured flowers, is O. albo-rosem.

Ornithogalum—Parochetus Communis. 113
ORNITHOGALUM. See Bulbs.

OXALIS (WOOD SORREL). Illustration page 84.

Dwarf and charming little plants remarkable in many instances for their free-flowering qualities. One of the most beautiful is O. bowiena, which is a free-growing kind over 6 inches high. The umbels of large rose-coloured flowers are produced freely throughout the summer. One of the best for growing as a basket plant suspended from the roof or rafters is O. floribunda. It has dark-veined rose-coloured flowers borne in a long succession. They grow well in light rich soil, and are increased readily by division after the leaves have died down. One of the most charming is the Falkland Island plant O. enneaphylla. This grows about 4 or 5 inches high, with glaucous leaves having about nine leaflets each; forming a compact cushion. From amongst these the large pure white flowers are produced in late spring. It requires to be grown in sandy loam and in a frame which is shaded from the sun. Besides these there are many others worthy of cultivation.

PAROCHETUS COMMUNIS (SHAMROCK PEA).

A beautiful little creeping perennial with cloverlike leaves, only a few inches high, bearing in spring and summer pea-shaped flowers of a beautiful blue. It may be grown in pans in a cold frame in a mixture of sandy loam and plenty of leaf soil, and is increased by division in spring or by seeds. A native of India. It is a bog plant and requires plenty of moisture.

PELARGONIUMS. Illustration page 85.

These are often erroneously termed Geraniums. but although closely allied to the Geranium family they are distinct from it. While the Geraniums are all or chiefly natives of the northern half of the globe, the Pelargoniums come from the southern hemisphere, or have originated as hybrids in European gardens. It is a large genus and contains many species which are divided into sections. Of all the varieties the zonal or bedding out Pelargoniums are the most useful, either for flowering in pots all through the year or for summer bedding. As they hybridize so freely, and are readily raised from seed, innumerable varieties are in cultivation of nearly all shades of colour, from white to intense scarlet; while the richest purple and violet shades are also to be found. As they can be had in flower all the year round their value for the purpose of cut flowers is immense, while the rapidity with which they can be propagated, and their easy culture is another great advantage. Few plants can be more readily increased than the Pelargoniums. Every single joint that is sufficiently mature, or a bud with a leaf in most kinds will generally form a plant. The best cuttings are those made from shoots that are moderately hard, and these will strike at almost any time of the year. The usual time for putting in cuttings is in the autumn or





spring. Autumn-struck cuttings which have been taken in August and inserted round the edges of a pot of sandy soil will have plenty of roots before winter. These may either be potted off at once, or kept in a cool light place during the winter, and potted off singly in spring. These will produce a supply of bloom during the summer months. For winter flowering plants, cuttings may be struck in spring in a temperature of 50 degrees. They must not be kept too close, or receive too much water, as they are very liable to damp. When well rooted, move into 4-inch pots, draining well, as they cannot bear stagnant moisture. The growing points should be pinched out in order to make the plant grow bushy. Later on the plant should be moved into 5- or 6-inch pots for flowering. In order to reserve the strength of the plant for flowering in winter, all flowers should be pinched off during the summer and autumn. A good light position is essential and while enough water should be given, over watering should be carefully avoided. During summer the plants may be stood outside, moving them into the house before there is any danger of frost.

Soil.—Pelargoniums require a good fibrous loam to grow them well—not too light or sandy in texture. With this should be mixed some well-rotted stable manure. Do not sift the soil, but pull it to pieces, breaking the turfy portions into small bits, and add as much sand as will keep the soil open. The soil should be pressed firmly in the pot, and as Pelargoniums do not like too much pot

room, overpotting should be avoided, or they run to leaf instead of flower.

Insects.—Pelargoniums are very subject to green fly, which must not be allowed to establish itself on them. Fumigation is the best remedy as soon as the insects are noticed.

Old plants of Zonal Pelargonium may be kept over the winter by shaking off all the soil from their roots, and potting them up in small pots. These may be kept in a cool light house, and no more water given to them than is necessary to keep the soil from getting too dry. In spring they may be potted on again and will make good plants for flowering early in summer, or if wanted for winter flowering, they should have all the flowers picked off as they appear till the late autumn. The Ivyleaved section is valuable for training up pillars or trellis work in the house, or for hanging baskets and window boxes. They require the same treatment as those of the zonal section.

The range of choice in flowers is very considerable, with both single and double flowers of many distinct shades, and as one kind is almost as good as another it is not worth putting down a lot of names.

PENTSTEMON.

A North American family of half hardy and hardy plants, many of which are very beautiful. Some of the large-flowered hybrids which are used so much for bedding out in summer are very free

flowering and handsome. They have been obtained by hybridising P. Cobæa, P. gentianoides, and P. Hartwegü among others, and have been greatly improved during the last few years. The Pentstemon succeeds well in any good soil, and cuttings may be struck at almost any time of the year. The best plan, however, is to take them in August or September from the young growth that comes up round the main stem of the plant; the softer the wood, the more readily do the cuttings root. About 4 or 5 inches of the points of the leafy shoots should be taken, and cut cleanly across just below a joint, and then inserted in pots filled with a light sandy soil, well drained. Press the cuttings firmly into it, and place the pots in a cold frame. When rooted they should be potted off singly in small pots and grown on as required. For pot work some of the species which make nice little bushy plants are very effective. P. heterophyllus is a lovely plant when grown in a 6-inch pot, coming into flower in June and lasting for nearly two months. The blooms are of good size, freely produced on long spikes and of a lovely shade of blue. P. humilis is another dwarf species, only about 6 inches high and bearing bright blue tubular flowers with a pale throat in June. P. glaber is also a desirable plant, with a tuft of leaves and a stem about a foot or 18 inches high, the upper half covered thickly with large purple-blue flowers. All are readily raised from seed sown in March. They come up better if placed in a little heat, but it is not necessary. As the seedlings get large into it, and place the pots in a cold frame. When it is not necessary. As the seedlings get large

enough, pot them off singly in small pots, using a mixture of two parts loam and one of leaf mould and sand. These will be large enough to flower the following spring.

PETUNIA. Illustration page 86.

Is an old favourite that is perhaps not grown so much as in former years. It is, however, most effective both as a bedding out and as a pot plant. The double forms, many of which have large, full, and many-coloured flowers make fine specimens for pot culture in the greenhouse. They are also useful for cutting for bouquets, and for dressing vases. The Petunia is an easily managed subject, and in the case of special named kinds it is propagated by means of cuttings. The best plan is to keep the old plants through the winter on a dry shelf, and in the spring when they commence to grow, the shoots should be taken off when 2 or 3 inches long. These are inserted in silver sand, and root in a few days if placed in a little bottom heat. As soon as the cuttings are sufficiently rooted, pot singly into small pots, and give further shifts as required. To keep the plants in shape pinch out the longest shoots, and give plenty of water when the pots are full of roots. They may also be raised from seed in spring to flower the same summer and autumn. A great variety of differently coloured flowers may be obtained from a mixed packet of seed.



Saxifraga Fortunei.







PHLOX. Illustration page 91.

On seeing the name Phlox, the mind will no doubt at once revert to the handsome plants so largely grown in gardens, and of which there is such a great variety of form and colour. These, however, are scarcely adapted for our purpose, and we must look to the smaller growing members, which if not so large are quite as lovely. P. divaricata is an elegant pot plant for spring flowering, growing about a foot high. It makes a bushy plant with many stems, covered for a long time with charming lilac-blue flowers. It is spread over the United States and Canada, and varies in colour from blue to white. Another little gem for growing in pans is the Moss Pink (P. subulata). It is a moss-like little evergreen with prostrate stems forming a dense cushion. This is covered in the typical plant with rose-coloured flowers having a dark centre. There is also a pure white form of this called P. nivalis. The dwarf Phloxes are all increased by means of cuttings taken during the summer, when they strike freely in sandy soil in a close frame or under a bell glass. They should be first potted up into small pots, and in the autumn put four or five together into a 7-inch pan, when they will make a charming display the following spring. It is not necessary to strike cuttings every year as the old plants last for two or more seasons. They only want cutting back in the summer after flowering and a little top dressing of good soil given to them in the autumn. Light, rich,

and somewhat sandy soil is most suitable for Phloxes.

POTENTILLA (CINQUEFOIL).

Among the many members of this large genus are a few alpine species well worth growing in pots. P. alba, from the Alps and Pyrenees, with silvery leaves covered with a silky down on the lower sides, is a dwarf plant 4 to 6 inches high, with white flowers about I inch in diameter. P. ambigua, from the Himalayas, is also a dwarf compact creeper, with large clear yellow flowers in summer on a dense carpet of foliage. P. nitida is a beautiful little plant from the Alps only 2 inches high. It has silvery leaves, and there are two forms, one with delicate rose-coloured flowers, and another with white. All three are increased either by division of the root in autumn or spring, or by seeds. They like a somewhat sandy or stony soil, with plenty of sun and thorough drainage.

PRIMULA (PRIMROSE). Illustration pages 92, 97, 98, 103, 104.

The Primrose family contains over a hundred species found in different parts of the northern temperate regions. Owing to its wide distribution it naturally follows that the various constituents vary to a great extent. Many of them are of great beauty, and nearly all are worth growing in a collection. But for our purpose it is only necessary to mention a few which are eminently suitable for cultivation in pots, either in a cold frame or

greenhouse. One of the best known is probably P. Auricula, in its many forms called Auricula. The Auricula has been in cultivation for some 300 years, and during that time a great namber of varieties have been produced by selection and hybridisation. In a wild state P. Auricula has mealy leaves and golden yellow flowers, a most charming plant. The florists' varieties grown are classified into sections according to the form of the flower. Selfs are those which have the outer and larger portion of the flower of one colour or shaded, the centre or eye white or yellow, and the flowers and other parts usually smooth and not powdery. In the other great section the flowers and stems are thickly covered with a white powdery matter or "paste." These latter are again divided into subsections according to the edges of the flower, viz., green-edged, grey-edged, and white-edged, while there is also a self-coloured one belonging to this set, with a ring of powdery meal surrounding the eye of the flower. Those generally known by the names of alpines are the hardiest, and may be grown in the open border, while the florists' varieties need a cold frame. Auriculas may be propagated by division just after they have flowered, or by means of seed. Seed ripens in July and is usually sown about the end of February, although some prefer to sow as soon as the seed is ripe. Sown in the spring the seed will germinate quickly. The soil in which they are sown should consist of two parts good fibrous loam, and one part of well decayed leaf mould, with enough coarse sand

added to keep the soil well open. This compost will do both for seed sowing and for potting. Whether the seeds are sown in pans or in pots the drainage must always be perfect. Plenty of crocks should be placed at the bottom and covered with a layer of fibre. Then the soil should be pressed firmly in, but left as fine as possible on the top for the reception of the seeds. The seeds should be sown thinly and covered lightly with fine soil. Some good growers stand the seed pots in saucers filled with water and cover with a sheet of glass till the seedlings come up. Watering overhead is apt to wash the seedlings out, and when water is required the pots should be dipped in it, allowing the water to soak up through the bottom. As soon as the plants show a rough leaf they are ready for transplanting into pans, placing them about I inch apart. By August they will be large enough for potting singly into 3-inch pots, in which they will generally come into flower the following spring. While the plants are small, and after each transplanting, they should be kept rather close, but as they grow air should be admitted freely. Careful attention must be given to watering, especially during the autumn and winter. The plants must never get dust dry, nor ever sodden. In spring sown thinly and covered lightly with fine soil. never get dust dry, nor ever sodden. In spring they naturally require more watering than when in full growth. Many beautiful varieties may be raised from seed, and if a desirable variety is noticed, it may be marked and increased by means of division. Larger specimens may be potted into 5-inch pots. A beautiful species is P. cortusoides, which comes





from Siberia and Japan. It varies considerably and there are many fine varieties of great diversity of colour, and beautifully-fringed petals. They flower in April and are easy to cultivate, growing in any good garden soil with a little decomposed manure. They may be grown well in 6-inch pots or even smaller, and produce a succession of flower stems for a long time. Some of the best varieties are clarkiæflora, lilacina, Mauve Beauty, laciniata, and maxima, among a host of others. They lose all their leaves in autumn and winter and commence growing early in spring. P. denticulata is a Himalayan plant with tufts of broad foliage and dense heads of lilac-coloured flowers in April. It is easily raised from seeds and grown on in pots.

P. marginata is one of the most attractive and long-lived members of this family. It is readily distinguished by the silvery margin of its greyish leaves, and rose-purple flowers, and is one of the most useful for growing in pans. It should have plenty of broken limestone mixed with the soil in which it is potted, and should be carefully watered in winter. Besides these few mentioned there are many others well worth cultivation, including many from the European Alps, like P. villosa and its white variety, P. clusiana, P. minima, P. longiflora, and P. latifolia. P. rosea from the Himalayas is a charming little Primrose with flowers of the loveliest carmine-pink on stems only a few inches high. It requires to be grown in rather moist soil

and in shade.

132 Ramondia Pyrenaica—Richardia.

RAMONDIA PYRENAICA (ROSETTE MULLIEN).

Is an interesting Pyrenean plant, with leaves in rosettes close to the ground, and deep lilac flowers with an orange-yellow centre. It should be potted up in fibrous soil and broken limestone, and the rosettes should be kept well above the rim of the pot. They do not like sun, so that if possible the pans should be stood on the north side of a wall. It may be raised from seed, but this is a slow process, taking some three or four years to get flowering plants with the best of treatment.

RHODANTHE. See Helipterum.

RICHARDIA (ARUM LILY).

The "Lily of the Nile," as this is sometimes called, was introduced into Europe from South Africa in 1687. It has long been a favourite plant, and may be grown with success in pots. It should be potted in strong loam, and receive abundance of water when growing. In the summer the pots may be stood outside to ripen off the plants, which then do not require so much water, but they must not be allowed to get dust dry. In the autumn bring them into the house, and water carefully, when they will commence to grow and produce their trumpet-shaped white flowers in April and May. It is increased by division of the root in autumn.

SALVIA. Ilustration page 109.

Several of these are handsome free flowering plants suitable for conservatory decoration. They are easily grown in loamy soil in pots, and may be propagated by means of cuttings struck in a close frame in spring. One of the most showy is S. fulgens with scarlet flowers in August. S. patens is a lovely blue, and very free flowering, and there is also a white variety, both of them blooming in August.

SAPONARIA (SOAPWORT).

Belonging to the Pink family this does not contain many good garden plants. The best and most interesting is S. caespitosa from the higher regions of the Central and Eastern Pyrenees. A dwarf compact plant, the leaves are produced in a tuft of small rosettes, while the beautiful rose-coloured blossoms are produced in July. It is a desirable little plant for the cold greenhouse, as its flowers are freely borne, and last for a long time in full beauty. It should be potted in very sandy or gravelly loam, as it suffers from damp in winter.

SARRACENIA (SIDE-SADDLE FLOWER).

Interesting plants belonging to the family of Pitcher plants, and natives of North America. The whole leaves form a kind of elongated pitcher, inside of which is secreted a sweet liquid that strongly

attracts flies and other insects. They grow very well in a cold moist atmosphere and require plenty of water during the growing season. When grown in pans thorough drainage is essential, and plenty of broken crocks should be placed at the bottom of the pan. A mixture of half peat and sphagnum suits them very well. The best and most suitable kinds are S. purpurea, S. flava, S. Drummondi, and S. psittacina. When in flower, some are handsome; but the chief attraction is the pitchers.

SAXIFRAGA (ROCKFOIL). Illustration pages 110, 115, 116, 121, 122.

The rockfoils form a very large and important family of interesting and useful plants. The various members have a wide range of form, and we get several distinct sections of plants. The mossy section is a most important one, yielding many plants that are especially useful for growing in pans for winter effect, as well as later on when in flower. In the crusted section we have a great variety of beautiful plants that are difficult to surpass when in full flower. All those suitable for our purpose are contained in these two sections, and they are fairly easy to cultivate. They are best grown outside during the summer months, either plunged to the rim of the pot in ashes or stood outside on a bed of ashes. The mossy kinds like rather more shade than those belonging to the crusted section, which enjoy plenty of sunshine. One of the earliest in flower is S. burseriana, from the Austrian Alps, which blooms in January. It





is almost moss-like in habit, with large pure white flowers, borne singly on slender red stalks 2 or 3 inches high. The little plants soon form good sized tufts if grown in suitable soil, a mixture of loam and sand with some mortar rubbish mixed with it. Good drainage is essential, as a sour mass of soil is fatal to its well being. It may be increased by division as soon as it has finished flowering, the tufts being pulled apart and the pieces potted up in very small pots. In the autumn they will be ready again for making up into pans, ready for flowering in the following year. A most variable kind is S. Aizoon, which forms masses of silvery grey foliage in rosettes. These are very ornamental in winter when grown in good sized masses, while in spring there is an added attraction in the freely-produced flowers. It can be grown freely in the same mixture as recommended for the above species, and is easily increased by division in summer or winter. S. ceratophylla (Štags-horn rockfoil) is an ornamental species of the mossy section, as is S. cæspitosa, which forms dense carpet-like masses of foliage arranged in rosettes. One of the most beautiful kinds is S. Cotyledon, which forms large silvery rosettes and bears elegant pyramids of white flowers in spring on stems often two feet high. The rosettes should be potted up singly in rather poor gravelly soil, and to get good specimens all the side shoots should be removed as they appear. These offsets may be grown on in small pots for flowering another season. They root quickly if kept under a handlight for a time, and

will make good flowering plants in two years. After flowering, the old plant usually dies, although offsets are freely produced. For autumn flowering, there is S. Fortunei, which has large panicles of white flowers rising from rosettes of dark green rounded leaves. It is easily grown in ordinary garden soil. A choice kind is S. lantoscana after the style of S. Cotyledon, but with smaller rosettes of leaves and drooping spikes of flowers densely crowded together on the upper side. The Pyrenean S. longifolia makes rosettes of leaves sometimes 6 inches or more in diameter, and bears in early summer its fox brush-like columns of white flowers I to 2 feet long when well grown. They are best grown singly in 6-inch pots well drained and filled with a mixture of sandy loam and broken limestone. It likes plenty of sun and also water when in growth. S. oppositifolia in its several forms is one of the most distinct and charming. In habit it is creeping, forming a mass of dark green foliage, covered in early spring with sheets of purple rose-coloured flowers. It likes a richer and more moist soil than the others, and a mixture of a rich light loam, rocky fragments, and leaf soil with a little sharp sand will suit it admirably. Providing that it can obtain plenty of moisture at the root it will do in full sun, but prefers a half shady position. The two best varieties are S. oppositifolia var. rubra and S. o. var. pyrenaica. There is also a white one (S. o. var. alba) well worth growing. S. sarmentosa (Mother of Thousands) is a wellknown plant with roundish variegated leaves, and

numbers of slender creeping runners, producing plants like the Strawberry, It grows freely hanging in the window of a room, and may often be met with suspended in cottage windows. It is a Chinese plant and may be grown in the same kind of soil as S. oppositifolia. All the Saxifragas may be raised from seed. This is very fine, and care should be exercised when sowing. By preference, sterilised or burnt soil should be used, first half filling the pot with crocks, then filling up with fine soil over a layer of coarser pieces covering the crocks. Sow the seeds evenly and then with a fine sieve slightly cover them with soil. Some do not cover with soil at all, but merely place a piece of glass over the top till the seeds germinate. When water is required dip the pot in a pail of water, but do not allow it to reach the seeds, or they will all be floated away. As they get large enough the seed-lings should be pricked out several together in a small pot, using sandy soil. Keep growing on in a close frame for a time, and eventually pot them off singly as they require it. Those who have a liking for the plants of this family will find plenty more kinds well worth cultivation, including S. Andrewsü, S. caesia, S. ciliata, S. scardica, S. hypnoides, S. Wallacei, S. cochlearis, S. apiculata (one of the earliest and best yellow flowering kinds), and S. umbrosa, among many others.

SCAGIOSA (Scabious).

Of the Scabious family the two most suitable

for the cold greenhouse are S. grammifolia with silvery leaves and pale blue flowers in June, and S. pterocephala (Wing headed S.), a dwarf tufted hardy perennial 4 to 6 inches high, and pale purple flowers. The latter is a native of Greece, and both will do well in any good soil, being increased by seeds or division.

SEDUM (STONECROP). Illustration page 123.

Like the Saxifragas these plants represent a great variety of habit, some, like our native S. acre, being small and creeping, while others, like S. spectabile, are stately plants for the border. There are a great number in cultivation owing to their evergreen habit, and the ease with which they may be grown. They cannot be called attractive plants like the Saxifragas, but still a few are worth while growing. S. album grows close to the ground and bears a profusion of white flowers in spring. It is called the Worm Grass on account of the creeping stems. S. spathulifolium from North America is somewhat showy, with thick glaucous foliage and yellow flowers. S. Sieboldi is a variegated kind from Japan. S. stoloniferum has rosy purple flowers, while S. ternatum grows about 6 inches high with white flowers freely produced. S. Stahlü is a curious kind from Mexico with very fleshy leaves which will root if they fall off on moist soil.





LONICERA SEMPERVIRENS



SEMPERVIVUM (Houseleek).

Thick-leaved succulent plants forming rosettes, the most familiar kind of which is S. tectorum (Common Houseleek), often seen growing in patches on old roofs and walls. They are all very similar in habit, chiefly differing in the colour of their foliage. All will grow well in pans filled with sandy loam and broken stones or brick rubbish. One of the most interesting is S. arachnoideum (Cobweb Houseleek), with tiny rosettes of fleshy leaves, covered at the top with a thick white down, which spreads itself over the leaves like a spider's web. The rose-coloured flowers are produced in summer. Other red-flowered kinds are S. fimbriatum, S. montanum, and S. Laggeri. Yellow flowered include S. arenarium and S. globiferum (Hen and Chickens). With nearly white flowers is S. Allionü. All are freely propagated by division or seed at almost any time of the year, the off sets being freely produced.

SIBTHORPIA EUROPÆA (MONEYWORT).

Is a little native creeper with slender stems and small round leaves. Grown in pans in a cold frame or greenhouse it forms a dense carpet on moist soil, but the flowers are not showy. The variegated form is prettier than the type, and there is also a variety with golden foliage. Both these are more delicate than the green-leaved type, but will grow well under the above conditions in a mixture of equal parts loam, leaf soil, and sand.

SILENE (CATCHFLY).

A genus of the Pink family containing many beautiful little plants. They are chiefly natives of Central and Southern Europe, although a few are found elsewhere. Several kinds are well adapted for culture in cold frames, of which the following are the best. S. acaulis (Cushion Pink) is a very dwarf alpine herb, forming tufts of moss-like foliage, and bearing its pink or rose-coloured flowers in summer. These are produced only just above the foliage, making it a charming object. It is found wild on some of our mountains, forming sheets of deep green foliage several feet in diameter, covered with a mass of brilliant flowers. S. alpestris (Alpine Catchfly) grows about 6 inches high, with white flowers in May. The stems are quite sticky with viscid matter as in many other members of this family. A beautiful plant is S. Elizabethæ, with very large curiously-formed flowers of a bright rose colour. S. Saxifraga is a neat tufted perennial with abundance of white flowers in June. S. schafta from the Caucasus is a late-flowering species, growing about 6 inches high, covered with large purplish-rose flowers. All the above may be grown in soil which has plenty of broken stones mixed with it, and may be propagated either by cuttings in summer, or by means of seed in spring.

TENCRIUM (GERMANDER).

A few of these which belong to the Sage family are of neat habit. T. Chamædrys (Wall Germander)

grows from 6 to 10 inches high with shining leaves and reddish-purple leaves in summer, and is a useful plant for growing in pans. T. Marum (Cat Thyme) which has such a strong attraction for cats, is a pretty little shrubby plant, growing nearly a foot high, with small leaves and bright red flowers in summer. It is a native of Spain and is generally found growing on old walls and ruins. The South European T. Polium (Poly Germander) is a curious dwarf plant with woolly leaves and pale yellow flowers, densely covered with short yellow down in summer. Two others worth growing are T. montanum, and T. pyrenaicum, both of dwarf habit. All may be propagated by division in spring or by seeds.

TRILLIUM (WOOD LILY, TRINITY FLOWER). Illustration page 124.

Perennials of dwarf habit, chiefly found in shady woods in North America. Where a shady spot is available they may be grown successfully in pots filled with rich soil well drained. The finest of all is T. grandiflorum 6 to 12 inches high, each stem having three leaves near the top surmounted by a large and lovely white three-petalled flower. Others worth having are T. erythrocarpum (Painted Lady), a beautiful little flower; T. sessile, with chocolate-coloured flowers, and T. erectum. Peaty soil with plenty of leaf soil is suitable for all, and when established they do not care to be disturbed too often, flowering in the same pan year after year.

TUSSILAGO FRAGRANS (WINTER HELIOTROPE).

The fragrant flowers of this plant are often welcome during the winter. It may be grown planted out under the stage of the greenhouse, making a pleasing carpet of foliage in summer, and in winter producing its spikes of purplish flowers freely. If there is not room under the stage, the plants may be grown outside and potted up in autumn for flowering inside. Any good garden soil is suitable.

VERBENA.

The Verbena is chiefly grown for bedding-out purposes, but attractive specimens may also be had in pots. One of the best methods of striking and wintering the Verbena consists of placing the cuttings in a cold frame in August. A bed should be made up for them if a large quantity is required, but a small and shallow box will do. At the bottom place a layer of leaves, over this fill in with a mixture of equal parts loam, leaf mould, and sand. Press it firmly down and insert the cuttings, which should be selected from the shortest and least drawn of the shoots. Kept close and shaded for a time they soon root and may then be pricked off into boxes, or singly into pots, using the same kind of soil. Through the winter they may be kept in any dry airy place out of reach of frost. In spring they may be potted on, either for growing into specimens or for planting out in window boxes or borders. To get good pot specimens the strongest shoots should be pinched off from time to time till



Muscari Szovitsianum (Grape Hyacinth).



Hyacinth, Captain Boyton.

the plant is large enough, when it may be allowed to flower. The plants can be grown in a cold frame till they are just beginning to come into flower, when they can be placed in a cool greenhouse, on the shady side. Verbenas are also raised from seed in heat in March. In six weeks they will be large enough for pricking off singly into small pots, returned to the heat and kept close for a few days. They are then gradually hardened off ready for planting out or otherwise. The varieties are very numerous, and seed is sold in all colours of scarlet, white, blue and rose.

VERONICA (Speedwell). Illustration page 129.

Some of the low-growing members of this family are charming plants in pots. The best is V. Teucrium var. dubia, sometimes called V. prostrata. It is exceedingly free-flowering with long spikes of lovely deep blue flowers in spring. It only grows about 4 inches high with prostrate stems, and will grow in any well-drained and good soil. Others worth growing are, V. saxatilis, with neat tufts about 6 inches high, and flowers about ½ inch across; they are of a pretty blue, striped with violet, and have a ring of crimson near the white base of the flower; and V. pectinata, a trailing kind with blue or rose-coloured flowers. All the perennial Veronicas are easily propagated by division in autumn or spring, or by cuttings in July.

VIOLA ODORATA (SWEET VIOLET). Illustration page 130.

This favourite plant in a wild state is found

widely spread over Europe and Northern Asia, and is common in many parts of this country. It is probably grown in nearly every garden in one form or another, and naturally flowers outside in the open in spring. When flowers are required during the winter months the plants have to be grown in cold frames. Plants may be obtained by setting out runners in spring in rich moist soil, giving them plenty of water during dry weather. They should be taken up and planted in the cold frame early in autumn. Here they will keep on growing for a time till the approach of winter, when they must be covered with a light. Plenty of air should be given on fine days, and in severe weather cover the lights with mats to keep out frost. Under this treatment Violets may be had in flower long before they bloom in the open. Violets may also be grown in pots filled with rich soil, but they do better when planted out in a frame. There are many kinds grown, among which may be mentioned the Czar (a large and sweet variety), the Neapolitan and Marie Louise, both double, the latter being larger and deeper in colour. These are only a few among the many in cultivation. Violets are very liable to damp in winter, especially if kept close, and all decayed leaves should be constantly removed. A very free-flowering kind is V. munbyana.



VIOLET



CHAPTER XI.

BULBS.

Among those flowering plants which have a bulbous root we possess some of the most beautiful subjects grown, either in pots for the greenhouse or for planting outside in beds or border. embrace a great variety of form and colour, ranging from the ever welcome Snowdrop, which appears early in spring, or even before winter is over, to the many kinds of stately Lilies which flower in early summer. They are exceedingly useful for growing in pots, pans, or vases for the decoration of the greenhouse, and also the living rooms of the house. And as the majority of the more showy kinds may be purchased at a low price, they are within reach of most who possess a greenhouse. As bulbs rarely do so well the second season in pots it is advisable to throw them away after flowering, or else plant them out in the borders or grass in the case of Crocuses or Glory of the Snow. The following hints will enable those who desire to cultivate spring-flowering bulbs in pots to grow them successfully, if carefully carried out.

Time of Potting.—The best time for potting spring-flowering bulbs is from the middle of

September to the middle of October.

Soil.—The best compost to use is a mixture of two-thirds good fibrous loam (not passed through a sieve, but pulled to pieces by the hand so as to retain as much fibre as possible), one-third decayed leaf soil, with a portion of sharp silver sand. Some growers advise adding 1½lb. of bone meal to every bushel of soil. All should be well mixed together before using. Soil should not be used for potting when in a wet or sticky state. The pots should be carefully washed or brushed clean before using. Dirty or wet pots should never be used.

Drainage.—Is most important, and should be secured by placing one large piece of broken crock over the hole with the bevelled side uppermost, then place other smaller pieces of crocks over it. On top of this put a layer of rough fibre from the

loam.

Potting.—In potting up the larger bulbs they should only be half covered with soil, the level of which should be half an inch below the rim of the pot, to allow for plenty of water when the bulbs are in full growth. The smaller ones, like Scillas and Snowdrops, should be covered to the depth of over an inch.

After potting, stand the pots outside in the open (the best place is on the north side of a wall) on firm ground, such as a bed of ashes, or gravel path, to keep out worms. Then cover all over with cocoa fibre or ashes to a depth of 3 or 4 inches,



Iris Buchasica.



Iris Reticulata.

taking care to work it well down in between the pots. This will secure a natural and moist condition of the bulbs, and encourage the roots to grow and fill the pot. While the pots are plunged in the open they will not require watering. Although covering in the above manner is advantageous, it is not essential except in the case of the larger bulbs which are half exposed. Pots containing smaller bulbs which are covered with soil may be

merely plunged to the rim in ashes.

In about twelve weeks the bulbs should be well rooted, and some may be moved indoors in succession, selecting those which bloom early naturally. Place first in a cold frame, cold greenhouse, or cold sitting room free from draughts, and keep partially shaded for a few days (those which have been covered with fibre, the others will not require shade) giving water gradually. Weak liquid manure water may then be given once a week till they come into bloom. Those that are wanted in bloom early may, after the flower buds are advanced, be placed in a warmer temperature. The plants should always be kept as near to the glass as possible, and not allowed to get drawn and weak from an insufficient supply of light and air. Bottom heat should not be given, and the plants should never be removed from the plunging bed till full of roots. It is a good plan when bulbs are removed from the plunging bed, to place an inverted flower pot over them for a day or two to prevent any check from draughts to the young growths.

Some kinds of bulbs start early into growth,

Bulbs.

and should not be potted up till the end of October and November. These include Calochortus, Gladiolus (early), Ixia, and Tritonia. The pots should be plunged to the rim only in a cold frame for about twelve weeks, after which the treatment is the same as for other spring flowering bulbs.

Culture of Spring Flowering Bulbs in Vases and Bowls.—There are many kinds suitable for this use, including Hyacinths, Tulips, Daffodils, Crocuses, Scillas, Chionodoxas, Snowdrops, &c. With these a charming effect can be produced in fancy vases or bowls with or without drainage, by simply using Fertilised cocoa fibre and Charcoal mixture. This mixture is light, clean to handle, and remains sweet, an important point where the vases used have no drainage holes. It is in every way prefer-

able to potting soil.

Culture.—Fill the vase or bowl with the cocoa fibre mixture, and plant the bulbs in the same manner as with ordinary potting soil; the larger bulbs should be only half covered, while the smaller ones should be just covered over. When potting fill the vase with the mixture up to a little below the rim, so as to allow sufficient room for watering. Pot firmly, and after potting give sufficient water to make the whole moderately damp. The vases may then be either placed in a cold frame and plunged in cocoa fibre for twelve weeks, or they may be placed in a dark cupboard or cool airy cellar until they have made a few inches of top growth. Then they should be placed in the window of a cool airy sitting room, or in a

cool greenhouse close to the glass, and flowered in the same way as pot Hyacinths, being always kept as near the glass as possible, and given sufficient light and air to prevent the foliage being drawn. When the flower buds are advanced they may be taken into a warmer room or greenhouse. No bottom heat must ever be given, neither should they be placed in too warm a temperature until the flower buds are well developed. Once the bulbs have started to make good growth the mixture must be kept moist, but water must be given sparingly until the bulbs have made some inches of top growth.

AGAPANTHUS (AFRICAN LILY).

A. umbellatus with its handsome blue flowers in large heads is a most valuable subject for growing in tubs and pots, either for the greenhouse, or for the summer decoration of porches, verandahs, and terrace walks. It is a plant that likes rich food in the way of good loam and plenty of well-decayed manure, as well as plenty of moisture when in full growth. During winter the plants may be kept in any dry airy place out of reach of frost, such as under the stage of a greenhouse or in a shed. The tubers should have all the old soil shaken off, and be repotted in good fresh soil in March, when the pots get too full of roots. Otherwise they will require plenty of manure water once or twice a week. A. mooreanus is a smaller and hardier plant, with smaller blue flowers in graceful umbels

158 Allium Neapolitanum—Calochortus.

about 2 feet high. The former grows over three feet. There is also a white variety worth growing.

ALLIUM NEAPOLITANUM.

This elegant Allium, which belongs to the Onion family, is largely grown for the market on account of its value as an elegant bouquet flower. The numerous heads of graceful white flowers are freely produced, and last a long time in a cut state. It grows well in any garden soil, and the bulbs, which are very cheap, should be planted about a dozen together in a 5-inch pot. After flowering, they may be planted outside or thrown away, as they are not worth keeping through the summer in pots.

BULLOCODIUM VERNUM.

A very low-growing plant only 3 inches high, it is one of our earliest spring-flowering bulbs, producing its rose-purple flowers very freely. A 7-inch pan with eight or nine bulbs in it, planted in sandy soil, forms a very effective display in February and March. It requires plenty of water when growing, and should be placed out in a sunny position to ripen off after the foliage has completed its growth.

CALOCHORTUS (BUTTERFLY OR MARIPOSA TULIPS).

These are lovely Californian bulbs, and belong to



Ixia Crateroides Major.



the same natural family as the well-known Tulips which are so largely grown in our gardens. They flower during the months of June and July, and for delicacy and brilliance of colour are unsurpassed. They make charming pot plants with about six or eight bulbs in a pot, and are most easily grown in a cold frame during the winter. During severe frost they require covering also with canvas or mats. A sunny place suits them best, and they should be potted up in light gritty or sandy soil, from September to November. Till the bulbs commence growing the pots should be kept plunged to the rim in ashes and will not require watering. In March, or before they generally start growing, and should have abundance of air with sufficient water to keep them moist. After flowering, withhold the water gradually, and well ripen off the bulbs under cover of glass. The earliest of all the Mariposa Tulips is C. Catalinæ, with beautiful large flowers on tall stems, ranging in colour from pale to deep lilac, with a dark maroon circle at the base. Another section called the venustus group have flowers of exquisite beauty, large and valuable for cutting. C. venustus var. citrinus have large flowers of a clear bright yellow with a conspicuous dark blotch on the middle of each petal. Others of this set worth growing are: El Dorado, varying in shade from white and cream to lilac, rosy-purple, pink, and many other shades; oculatus, white with a dark blotch; purpurascens; roseus; and Vesta; the last named a lovely variety and one of the freest growers; the flowers

are large, while the colour of the flower is rosepurple outside and creamy white inside, with a broad blotch of crimson maroon. These all have tall slender stems about 2 feet high. Others of smaller growth are C. albus, white; C. pulchellis, pale lemon; C. amænus, rose; and C. maweanus, a lovely species with open cup-shaped flowers, white flushed with rose, and densely covered with silky hairs.

CHIONODOXA (GLORY OF THE SNOW). Illustration page 135.

The Chionodoxa, which comes from Asia Minor, is one of our earliest as well as one of our loveliest spring flowers. In spring its sheets of blue when planted out in quantity are very effective, while in small pans it is very pretty in the cold greenhouse. Grown in a cold frame close to the glass it may be liad in flower in January. The bulbs should be potted up in September in light rich and gritty soil, and may be treated like other bulbous plants till they start into growth. Then they like plenty of water till they have finished their growth for the season. C. Luciliæ (The Glory of the Snow) is deep blue with a white centre, and there are also white and rose-coloured forms; C. gigantea is very distinct, with flowers twice the size of the last, and of a beautiful soft lavender blue; C. sardensis is true Gentian blue, with flowers freely borne on stems about 6 inches long; while C. Tmolusü is similar to the first named, but later coming into flower than any other kinds.

COLCHICUM (Meadow Saffron).

Most of the members of this genus are autumnflowering plants, their great Crocus-like flowers being produced in September and October. For our purpose, however, the few which flower in winter and spring are more valuable. In potting up, the bulbs may be treated like those above, the earliest to flower being C. brachyphyllum, with white to pale-pink flowers in December; C. Decaisnei with soft flesh-coloured flowers from December to February; C. hydrophyllum with fragrant rosy-purple flowers in February; and the rarer C. crociflorum from Central Asia, with white flowers lined with purple-violet markings. with the exception of the last come from Asia Minor and Syria, whence we get so many early spring-flowering bulbs.

CORYDALIS (FUMITORY).

Several species of this family have handsome much-divided foliage and make pretty pot plants. One of the earliest is our native C. bulbosa with its dull purplish flowers. Another with distinct habit and glaucous foliage is C. rutæfolia, having rosy-purple flowers in February and March. They are both of easy cultivation in light rich soil, and may be grown on from year to year with occasional repotting.

CROCUS. Illustration page 136.

This family offers a great range of brilliant

flowers suitable for early spring decoration, and deservedly occupies a foremost place in nearly every garden. Few things can surpass in beauty a pan full of these lovely flowers on a sunny day in February, when the blooms are fully expanded. Grown under cover of glass Crocuses are not so liable to damage by heavy rains and inclement weather, and we thus have them at their best under these conditions, whereas outside, the weather we get at this time of year is not usually favourable for these early-flowering favourites. Any ordinary these early-flowering favourites. Any ordinary garden soil suits the Crocuses, and when potting up the bulbs they should only just be covered with soil. About a dozen bulbs in a 6- or 7-inch pan will make a most effective display. They should be potted up early in September and should be kept plunged in ashes till they show signs of growth, when they may be moved into the house and kept as near the glass as possible. Plenty of water will then be required. A charming effect is obtained by growing Crocuses in shallow saucers, using Cocoanut Fibre, with the bulbs touching one another, and this may be accomplished in an ordinary sitting-room. Among the larger-flowered kinds we have many shades of colour, the chief being lavender-purple; dark purple; striped; being lavender-purple; dark purple; striped; pure white; golden-yellow; and cloth of silver, pure white feathered on the outside with rosypurple. All these may be obtained very cheaply, and a good display may be had for a small outlay. Crocuses do not flower so well the second year in pots, so that it is always advisable to have a fresh





supply every autumn. After flowering, they may either be planted out in the border at once, or be ripened off in their pans, and planted out later in the year. Besides the above large-flowering varieties which all bloom in February and March, there are many interesting and charming species which flower at different times and so prolong the season. Some flower in the autumn, others in the winter, so that one may get a succession from autumn to well through the spring months.

Autumn Flowering Species.—The best of these are C. asturicus, pale mauve to purple-lilac; C. longiflorus, beautiful soft lilac; C. pulchellus, lavender-blue with white anthers; and C. speciosus, a remarkably handsome kind, with large bright blue flowers with deeper markings on the

outside.

Winter Flowering.—C. ancyrensis, deep goldenyellow flowers; C. biflorus, white with purple markings; C. Imperati, violet, fawn, and black; C. Sieberi, lilac-purple with a yellow base; and C. susiamus (Cloth of Gold), golden-yellow, heavily striped with dark brown on the outside.

Spring Flowering.—C. aureus, pale to deep yellow; C. vernus, of which there are many lovely kinds ranging in colour from white to lilac and deep purple; C. versicolor, with deep lilac flowers variously shaded and striped with rich purple markings on the outside.

DODECATHEON MEADIA (AMERICAN COWSLIP).

A beautiful plant belonging to the Primrose

family, and native of North America, where they are called Shooting Stars. D. meadia is very effective in pans, with long slender stems and umbels of elegantly drooping flowers. It loves a light rich loam with plenty of leaf mould, and prefers a shady moist place in which to grow. It should thus be grown with the pans plunged to the rim on the north side of a wall, and plenty of water should be given to them while in full growth. They are best repotted up directly after the foliage has died down, and should never be allowed to get quite dry. With a little top dressing they will not need repotting every year. There are numbers of pretty and distinct varieties, differing more or less in height of plant and colour of flowers. This plant may be increased by means of seeds, sown as soon as they are ripe, or by division of the bulbs.

ERYTHRONIUM (Dog's Tooth Violets).

Illustration page 141.

These charming plants may be counted amongst the loveliest of our hardy flowers, and may be strongly recommended for pot culture. The European E. Dens-canis is found in various parts of the continent and has handsome oval leaves with patches of reddish brown. The rosy-purple or lilac flowers are borne singly on stems 4 to 6 inches high, drooping gracefully just above the leaves. Besides this there are many other varieties with white, rose and flesh-coloured flowers. The bulbs are white and oblong, resembling a dog's tooth, hence its name. Some of the American

kinds are very handsome, one of the best being E. giganteum, with showy white flowers, 3 inches in diameter, and having a ring of bright orange red. The stems are about 8 to 10 inches high and several flowers are produced on each stem. E. grandiflorum has yellow flowers. E. Hendersoni is one of the most distinct, with pale lilac flowers having a purple centre. E. revolutum is one of the most robust, with varieties ranging in colour from bright rose to creamy white. All like a rich moist soil, and will grow well with conditions similar to those recommended for the Dodecatheons. They may be left in the same pan for two or three years if the drainage is good, and a little fresh soil is added to the top. After this time they will need repotting, and then may be increased by dividing the bulbs. Erythroniums should never be allowed to get dry, and the pot or pan should be plunged in ashes as soon as it is turned out of the house after flowering.

FREESIA.

These are prized for their delightfully fragrant flowers, which last for such a long time when cut and placed in water. They are easily grown, and may be forced into bloom by Christmas with heat. Plant the bulbs in pots in September or October, six in a 5-inch pot, or twelve in a 7-inch pot. The tops of the bulbs should be buried 2 inches below the surface of the soil, which should consist of a mixture of good fibrous loam, well-decayed manure, and a little bone meal. Care must be taken that

there is good drainage. Then stand the pots on a sunny border and keep them slightly shaded until growth is showing, then expose to full sun. About the end of October remove the pots to a sunny part of the greenhouse and give plenty of air (not draught). When the flower-buds are opening a little weak liquid manure water will be found beneficial. F. Leichtlini major has primrose flowers with an orange blotch, and F. refracta alba bears sprays of deliciously-scented snowy white flowers. There is also a pink one, F. Armstrongi.

FRITILLARIA (FRITILLARY).

This is an extremely elegant family of plants, several of which are adapted and very pretty as pot plants. One of the most graceful is our native Snakes-head Fritillary (F. Meleagris), of which there are many varieties. In early summer the beautifully-tesselated purple and pale flowers are produced singly or two together on stems about I foot high. Planted several together in a pot they are pretty and effective, lasting for a long time in full beauty. F. aurea is a dwarf kind from Asia Minor, with pale yellow flowers chequered with brown. F. pudica with deep golden-yellow bells, flowers in April. F. coccinea is very showy, with handsome red flowers. They all flourish in good sandy loam, and require plenty of water when in growth. They should not be allowed to get dry in summer, and should be repotted early in autumn. Bulbs of F. imperialis (Crown



Nerine Sarniensis.







Imperial) potted up in September, make handsome plants, with their drooping flowers of various shades of colour.

GALANTHUS (SNOWDROP). Illustration page 142

Owing to its earliness in coming into flower the Snowdrop is one of the most welcome of spring blooming plants. It is indispensable for the cold greenhouse, where pans planted thickly with bulbs make a bright and pretty display. Like many other bulbs the Snowdrops only last or flower freely for one season in pans, but as they are so cheap they are well worth procuring fresh every autumn. Potted up early in sandy loam and well drained, the pans should be plunged to the rim to keep them moist without watering till they start growing, when they can be moved into the greenhouse. The largest and most distinct of all is G. Elwesü (Elwes' Giant Single Snowdrop), with snow-white globular flowers, the inner segments being marked with green. Our native G. nivalis and its double variety is also very charming.

GLADIOLUS COLVILLEI.

This beautiful early-flowering Gladiolus is extensively grown in pots and boxes for cutting during April, May, and June. It and the various closely allied varieties may also be grown in pots for greenhouse or indoor decoration. For culture

in pots plant 3 to 5 bulbs according to size in a 5 or 6-inch pot in October. Then plunge them in ashes up to the rim of the pot in a cold frame or pit, withholding water till the bulbs have started into growth; or the pots may be buried up to the rim in ashes on a warm border. In the latter case a light covering with canvas or litter must be provided during severe weather. When the plants have developed their flower spikes they may be removed into the cold greenhouse in order to bring them more quickly into bloom. These bulbs like rich soil, and a mixture of two parts good fibrous loam, one of leaf soil and sand, with some well-decayed manure, will suit them very well. Water must be supplied freely when the plants are in full growth. There is a great variety of different forms of which the following are very good: G. byzantinus, with showy brilliant rosy-claret coloured flowers about 2 feet high; G. Colvillei, crimsonpurple, flaked with white, $2\frac{1}{2}$ feet high; G. Colvillei roseus, flowers soft rose, with deep salmon rose stripe down the petals, very beautiful, 2 feet high; G. Collvillei "The Bride," with pure white flowers, very valuable in early summer for its cut flowers; G. "Blushing Bride," one of the most beautiful, flowers ivory white with deep crimson flakes, on stems about 20 inches high.

HYACINTHS. Illustrations pages 147, 148.

For growing in pots, glasses, or bowls the Hyacinth in its numerous colours and forms is one of

the most valuable spring flowering plants that we possess. The variety is so infinite, and they are so easily grown that they easily rank as first favourites with all lovers of flowers.

Pot Culture.—For this purpose the soil may consist of a compost of good fibrous loam with a liberal addition of well-decayed leaf soil and sand, and also some thoroughly decayed cow manure. The compost should be well mixed, and is better if left to stand for some time before being used. All pots should be thoroughly clean and dry, and new pots should be well soaked in water for a time and dried again before using. In potting barely cover the bulb, and it is advisable to keep the soil nearly an inch below the rim of the pot to allow for watering. After potting give one good watering, and then place the pots outdoors on a bed of ashes, cover with 6 inches of either ashes or cocoa fibre, and leave them exposed to all weathers. When the bulbs have well rooted, and made a little top growth, move them inside, first into a subdued light, until the blanched foliage has regained its normal green colour, then into the sunniest place at command in the greenhouse. A good plan is to place an inverted flower pot over the young shoots for a few days after being removed from the plunging bed. Abundance of air, a moderately moist atmosphere, and plenty of water at the roots are then necessary for early well-developed flower spikes. A draughty situation or a dry atmosphere will often cause the flower buds to shrivel. Care should be taken that the bulbs are well rooted before

moving them from the plunging bed, as Hyacinths are frequently spoiled by bringing them into the

greenhouse too soon.

For the earliest flowers in January and February, pot middle of September and leave in the plunging bed about 10 weeks. Later ones may be potted about the middle of October, and may be left plunged outside for three months or more before being brought into the greenhouse, sitting-room

window, or other sunny place.

Culture in Glasses.—For these only single Hyacinths are recommended. Pure clean water (rain water for preference), the same temperature as the room, should be used, with a piece of wood charcoal in it. The bulb should be made secure in the glass with a piece of porous substance and its base should at all times be just touching the water. First place the glasses in a cool dark place to encourage root growth, and keep well supplied with water. When the bulb has begun to grow at the top and has nearly filled the glass with roots, admit it to the light gradually, and then to the sunniest place handy where there is an even airy temperature. All that is necessary then will be to keep it well supplied with water.

Culture in Bowls.—For this purpose cocoa fibre and a little charcoal is suitable for use. It should always be kept moist, and when the bowl of Hyacinths is moved into the sitting-room or greenhouse it is greatly improved in appearance by having the surface of the cocoa fibre covered with

green moss.



Scilla Italica.



Hanging Moss Balls of Hyacinths.—This is a very charming way of growing Hyacinths, and may be done in the following manner. First make up a ball of moss about 9 inches in diameter, into which insert the Hyacinth bulbs all round, binding them in with string and more moss so that only their points are visible. Then run a wire through the ball by which it can be suspended in the greenhouse or sitting-room. At intervals of a week or ten days the ball will require dipping in water. Wirework baskets can be filled with moss and bulbs and be used in the same manner.

The number of named varieties are so numerous, and the greater majority are equally good and suitable for the above uses, that it would be superfluous to put down a list of names. They may be had in most colours, such as all shades of blue, red, purple, white, and yellow, both single and double. The White Roman Hyacinth, with its sweetly-scented flower spikes, may be had in flower during October, November, and December, if a little heat is available. Grown in bowls of pebbles and water, or cocoa fibre, they are charming for the sitting-room in spring.

IRISES. Illustrations pages 153, 154.

"Orchids of the flower garden" is a name that has been applied to the members of this family, for they compete in richness and variety of colour with the choicest and most beautiful Orchid. Those kinds with rhizomatous roots have been dealt with Irises.

in an early part of this work, and here we now deal with those having bulbous roots. All the smaller growing kinds are admirably adapted for culture in pots. They should be potted up early in the month of September in a compost of sandy loam and leaf soil, with a little well-decayed cow manure. Clean, dry pots should always be used, and the drainage should receive thorough attention. After potting, the pots should be plunged to the rim in ashes outside till they commence to grow, when they can be moved into the greenhouse.

A good selection to give a succession of flower from December to May is: I. alata (Scorpion Iris); is a pretty winter-flowering Iris from Algiers with pale blue flowers; it commences to bloom in December and continues to produce a succession for some time. I. Vartani, from the Holy Land, produces its azure blue flowers about the same time. Other winter-flowering kinds are I. Histrio and I. histrioides, both forms of the Netted Iris (I. reticulata). The latter blooms in February with deep violet-coloured flowers, with a golden yellow blotch, and sweetly scented. Others blooming in February are, I. Heldreichü, the most beautiful of the persica section of Irises, having flowers of a lovely lavender shade, with velvety violet and white markings, and a yellow crest; and I. Tauri, deep purple with lavender markings, and a deep orange blotch. In March and April we have the lovely yellow Iris or chioides and its closely allied I. bucharica and I. willmottiana. These are but a few of those that might be grown in a house of this Ixia. 183

kind, and that would afford much pleasure to lovers of small growing bulbous plants. With the members of this family alone a small greenhouse might be made of great interest, as well as attractive, for a great part of the year, from December to June. When the plants have finished flowering in the greenhouse, the pots should be plunged again in ashes, and plenty of water given till they have developed all their foliage. As they die down it should be withheld, in order to well ripen off the bulbs.

IXIA (African Corn Lily). Illustration page 159.

These are graceful and elegant little plants, bearing on wiry stems, long loose racemes of bloom of remarkably rich and varied colours. They are very attractive when fully open, as all kinds have a brilliant dark centre. For culture in pots the bulbs may be potted up from October to January in a compost of turfy loam, leaf soil, and sand. For a 4 or 5-inch pot six bulbs will be sufficient. Make the soil firm about the bulbs, and plunge the pots up to the rim only in a bed of ashes in a cold frame, or in a warm sunny corner. No water should be given till a little growth has been made, and then only sparingly at first. Plenty of air is required, but they need protection in the shape of lights or other covering in severe weather. In February they will be ready for removal into the greenhouse, where they should be kept close to the glass. Watering must be carefully attended to. A large

number of varieties are in cultivation of which the following is a good selection: Beauty of Norfolk, canary; Bucephalus, rich claret colour; Craterioides, cerise-scarlet; Excelsior, crimson-scarlet; Humbert, coppery rose; Lady Slade, rose-pink; Magnum Bonum, white; Queen of Roses, double bright rose; and viridiflora, the green Ixia. These are only a few of those that are worth growing, as many others might be named.

LILIUM (LILY).

The Lilies are such lovely plants that no greenhouse is complete without some of them, and any one with a cold unheated greenhouse can easily have a beautiful show of Lilies in pots during the summer months. The varieties best suited for this purpose are auratum, elegans, Brownii, longi-florum, Hansoni, Krameri, Umbellatum, concolor, rubellum, and tenuifolium. In potting be careful that the pots are clean and dry, and also provide ample drainage. Use a compost of loam, leaf mould, and plenty of coarse sand, but some prefer a mixture of peat, loam, and sand. Either is suitable for most kinds. Pot firmly, barely covering the top of the bulb, and leave room for more soil to be added when the surface roots appear. Then stand the pots on a bed of ashes, and cover them with cocoa fibre to a depth of six inches. This will be all the protection required while outside. When the growth begins to show above the covering remove the pots to a cold frame or greenhouse and start giving water sparingly. A little



Vallota Purpurea (Scarborough Lily).



weak manure water may be applied once or twice a week when the flower buds are well advanced, to help in the production of fine blooms. When taken out of the fibre the pots should be filled up to within an inch of the rim with soil. From this time onward Lilies need plenty of water and air, and if attacked by green fly they should be well syringed with a solution of soft soap and tobacco, or fumigated. By placing the pots in a little heat after coming out of the cold frame they may be brought into flower earlier. Of the many beautiful kinds the following are suitable:

L. auratum (Golden-rayed Lily of Japan). Commences to bloom in August, and continues to September with very large white, golden-rayed, and crimson-spotted flowers. It is one of the finest Lilies in cultivation, and bulbs may be bought at reasonable prices early in December. It

grows 4 to 5 feet high.

L. Brownii flowers in July, with handsome trumpet-shaped blooms nearly 10 inches long, white inside, and chocolate-brown on the outside of the petals. The stems grow 3 feet high.

L. concolor is a pretty little plant growing I foot high, with glossy scarlet flowers having dark

spots.

L. elegans and its many varieties flower in June and July, with lemon-yellow, orange, or crimson

blooms on stems about I to $I_{\frac{1}{2}}$ feet high.

L. Hansoni grows about 3 feet high with large wax-like flowers, bright golden-yellow, spotted crimson-maroon, in June.

L. Krameri grows about 2 feet high, with delicate

rose-pink flowers of great beauty in July.

L. longiflorum var. Harrisii (The Bermuda or Easter Lily) is a very handsome and useful plant, with beautiful long snow-white flowers, on stems about 3 feet high.

L. rubellum is an elegant Lily and makes a lovely pot plant with 2 or 3 bulbs in a pot, coming into

flower in June. Pale rose in colour.

L. speciosum, growing about 3 feet high, flowers in late summer and autumn. The colours include many shades of crimson with spots, to pure white. The flowers last well when cut and put in water.

L. tenuifolium is a graceful little Lily about 18 inches high, from Siberia, bearing scarlet flowers

early in June.

L. umbellatum forms a very showy section of Lilies, bearing in June large handsome flowers of various shades of colour, from crimson to yellow. They are valuable for pot culture.

After one season it is advisable to plant the Lilies out in the border, and obtain a fresh supply

of bulbs for pots.

MUSCARI (GRAPE OR STARCH HYACINTHS).

Will be found useful for early spring flowering, as they grow freely in any soil. One of the best for pot work is that called "Heavenly Blue." It has long spikes of gentian blue flowers, very freely produced in March. Pot up in autumn and treat as for Irises. Another good kind is M. Szovitsianum.

NARCISSUS POLYANTHUS (Nosegay Daffodils).

Illustrations pages 160, 165, 166.

These produce large heads of sweet-scented flowers, and are especially adapted for growing in bowls or pots for winter and spring decoration. The culture of these flowers is the same as for Hyacinths. Plant in October. One of the most valuable for early flowering is Paper White "Snowflake," with pure white flowers. Others are Grand Monarque, Muzart orientalis, Grand Soleil d'or, and Double Roman Narcissus.

The Sacred or Good Luck Lily of China and Japan is valued for its free-flowering qualities, and is remarkable for its rapid growth. The flowers are white, with a yellow cup, and very fragrant. Each bulb produces several flower spikes, bearing many flowers. It may be grown in living rooms in bowls filled with pebbles and water. Fancy bowls are obtainable for this purpose of the same kind that the Chinese use so much.

Many of the Daffodils are excellent for growing in pots, such as Cyclamineus, minimus, triandrus, and Bulbocodium varieties among the smaller kinds, and the Tenby Daffodil, Golden Spur, Emperor, Empress, and many others among the larger set. They may be potted up in loamy soil in September, plunged in the usual way up to the rim, and brought into the house when they have made some growth. While in full growth plenty of water must be supplied.

NERINE. Illustration page 171.

Although considered by some to be tender,

these beautiful plants may be grown in a cold frame or greenhouse. Established in pots they produce annually their handsome umbels of lovely flowers. In potting use a rich sandy soil and provide thorough drainage. They make most of their leaf growth in winter and spring and die down in summer, when little or no water should be given. In August the pots should be thoroughly soaked with water, and the bulbs will throw up their flower spikes during the autumn. Once established they do not need repotting for two or three years, flowering better when the pots are full of bulbs and roots, as long as the drainage is perfect. Of N. sarniensis there are many beautiful varieties.

PUSCHKINIA SCILLOIDES. Illustration page 172.

A beautiful little March and April flowering bulb, that makes a lovely indoor pot plant. The bulbs, 6 to 12 in a pan according to its size, should be potted up in September and treated in the same way as the Snowdrops and Glory of the Snow. The flowers are white, shaded and striped with clear blue, and grow about 6 inches high. Another kind comes from the Lebanon (P. libanotica compacta), and is larger and freer flowering.

SCILLA (SQUILL). Illustrations pages 173, 174, 179.

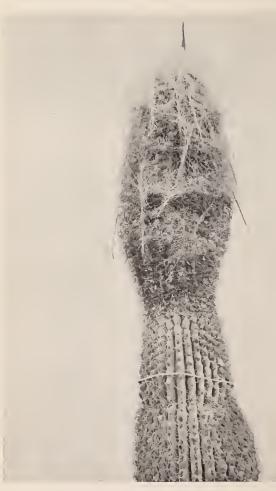
Of the easiest cultivation, several of the different kinds of Scilla are very useful for growing in pans for early spring flowering. Treated with the same



SCILLA SIBERICA







Cactus, Cereus Senilis.

kind of soil and in the same way as the Snowdrops, they are very effective. The Siberian Squill (S. sibirica) produces spikes of bright blue flowers on stems about 3 inches high. There is also a lovely white variety that goes well with the blue kind. Another handsome one is S. bifolia from the Taurus mountains in Asia Minor, with heads of deep blue or white flowers in February and March. S. italica flowers in May. S. hispanica may be had with blue, white, and pink-coloured flowers.

SPORAXIS (African Harlequin Flower).

Are charming bulbous plants from South Africa, of slender growth and showy flowers, which vary from white to bright scarlet and deep crimson, usually having dark centres. They are valuable for early summer flowering, and should be treated in the same way as Ixias. Most of the varieties are derived from S. tricolor.

STERNBERGIA (LILY OF THE FIELD).

Illustration page 180.

These are mostly autumn-flowering plants which require a sunny aspect and good light soil. Freshly imported bulbs potted up early in autumn will flower well the first year, but cannot be relied upon to bloom the next. It is therefore advisable to get a fresh supply annually if they are desired in the greenhouse. The largest-flowered kind is S. macrantha, which comes from Asia Minor, with

canary yellow flowers. S. lutea major, although smaller, is more effective and free flowering, with handsome Crocus-like flowers of a rich golden yellow. Planted in bowls of cocoanut fibre and charcoal, or in pebbles and water, it makes a charming plant for house decoration.

TULIPS. Illustration page 185.

Many of the wild species of Tulips, as well as the single varieties, are very showy when grown in pans with 4 to 6 bulbs in each. They are of very easy cultivation, succeeding well under the treatment accorded to Hyacinths. In fact they can be used in all the different ways recommended for those plants. Varieties may be obtained for flowering from February onward in a cold house, while the wild species mostly flower in April and May. Among the numerous varieties in cultivation may be mentioned a few suitable for flowering from February to March and April. Duc Van Thol varieties, scarlet, yellow, rose, and white; Joost Van Vondel, crimson-scarlet; La Belle Alliance, scarlet and gold; Primrose Queen, primrose yellow; Pottebakker, white; and Rose Grisdelin, delicate rose. Of the species worth growing there is: T. pulchella, crimson carmine; T. montana, brilliant red; T. Lownei, soft rose pink; and the early-flowering T. Kaufmanniana, with large flowers of elegant form and colouring, creamy white and yellow with carmine-red on the outside of the petals.



TULIPA KAUFMANNIANA



Vallota Purpurea—Zephyranthes Candida. 195

VALLOTA PURPUREA (Scarborough Lily).

This old favourite is a most valuable autumn-flowering cool greenhouse plant, producing on stout stems umbels of five or more large and brilliant scarlet flowers. These open in succession, and thus the plant remains in beauty for a long time. The bulbs should be potted up in good sandy loam in late spring, or may be planted out in a border at that time, and when showing bud potted up for greenhouse or window decoration. They are often grown in the same pots without repotting for years, but the drainage must be seen to occasionally, and they must also be given a top dressing with fresh soil.

WINTER ACONITE (Eranthis Hyemalis).

Make charming little plants in early February, with its golden blossoms resting on emerald green cushions of leaves. The tubers can be procured very cheaply and should be potted up about twelve in a 6-inch pan in September. Any kind of sandy loam will do, and the pan may be plunged in ashes out of doors till the plants commence to push up about the end of January. It should then be taken into the greenhouse and be supplied with plenty of water.

ZEPHYRANTHES CANDIDA (FLOWER OF THE WEST WIND).

Is a fine hardy bulb for producing a quantity of

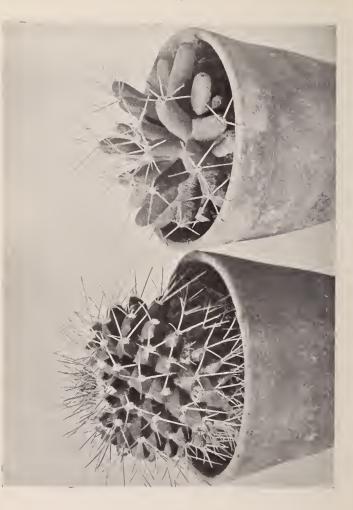
Zephyranthes Candida.

196

white Crocus-like flowers in the autumn. It is well adapted for pot work, with several bulbs in each pot. Sandy loam is suitable, and the plants also like plenty of sun, and should be well ripened off in the summer by giving them the full benefit of a hot sunny place.



Cactus Cereus Dasycanthus.





Cactus, Opuntia Microdasys Minor.



Rose, Little Pet.

CHAPTER XII.

FERNS.

For beauty and elegance of form there are few things to excel or even equal that of many ferns. They are usually looked upon as difficult to grow, except in a warm and moist atmosphere, but this is far from being the case. Of course they do not grow so luxuriantly in a cool greenhouse devoted to flowering plants, and where the atmosphere is not kept very moist, but still many kinds may be grown in a shady corner, and if cared for make presentable plants. Ferns grown under these conditions of a comparatively dry atmosphere and cool temperature are more robust than those grown in a warmer and moisture-laden house, and do not turn brown and unsightly so quickly when placed in rooms for house decoration. Although shade is essential to a certain degree for the successful cultivation of Ferns, it must not be excessive, for it causes a weak and delicate growth.

Propagation.—For those who would like to try and grow their own Ferns from spores, the following hints may be of service. The spores, which are

R

Ferns.

generally found in the shape of brown powdery substance on the underside of the fronds, may be sown at nearly any time of the year, but the autumnsown ones are very liable to damp in winter, so that the best time to sow is in spring. Ordinary pots or pans will do with plenty of drainage, while the soil should consist of a mixture of peat rubbed through a fine sieve, with an equal quantity of crocks or bricks broken up very small, and some sharp clean sand. Mix well together and fill the pot, pressing it firmly, then water it and sprinkle the spores on the surface, but do not cover them with soil. Then cover the pot with a piece of glass to prevent water getting to the spores and washing them away. The pots should then be stood in shallow saucers with water so that the soil can suck it up as required. A temperature kept above 40 degrees at night will be sufficient and the pots must be shaded from sun. In a couple of months the spores usually begin to vegetate in the shape of little green bodies on the surface of the soil, from which eventually will spring the young fronds. When the young plants are an inch or so high they should be pricked out into well-drained pans of soil similar to that in which they have germinated, and the soil should be kept moist. When they have grown a little they may be potted off singly into 3-inch pots, using the same soil as before. As the pots get full of roots, so the plants may be shifted on into larger pots if good specimens are desired, but ferns may be kept in a healthy state in small pots for a long time. With the larger-sized

pots rougher soil should be used to allow of perfect drainage, as these plants require an abundance of water. Ferns may be potted at any time while they are growing if done carefully, but the best time is in the spring, just as growth is commencing. Some of the Ferns, like the Maidenhair, may be increased by dividing the crowns in spring. After dividing and repotting in a mixture of fibrous loam, peat, leaf soil, and sand, the plants should be kept in a close house or frame for a few days, and shaded from the sun.

With regard to Ferns grown in rooms, these should have been first brought to a mature size in a cool and airy house, as the hardier they are grown the longer will they stand. The principal things to avoid are placing them in a direct draught too near an open window, allowing them to get too dry at the root, and exposing them in a sunny window without shade.

Insects.—The insects that attack ferns grown in cool houses are few, the chief enemy being the Thrips, which are encouraged by a dry atmosphere. Green Fly will also live on them, but both Thrips and Green Fly may be destroyed by fumigating with tobacco or other patent fumigator. Some of the broader-leaved Ferns may be cleansed by sponging.

The following kinds of Ferns may be considered amongst the hardiest, and many could be successfully grown in a cool greenhouse that is kept at a temperature of a few degrees above freezing

point:

204 Adiantum Cuneatum—Asplenium.

ADIANTUM CUNEATUM (Maidenhair Fern).

One of the most popular and decorative Ferns that are grown in pots, the fronds are so useful in making up button-holes and sprays. It is somewhat tender and should not be left in rooms too long at one time, or during the winter, if room can be found for it in the greenhouse. A hardier kind of Maidenhair is A. Capillus-Veneris, which is a rare native of this country. It is, however, not so elegant in form as the other species.

ASPIDIUM.

Several kinds belonging to this genus are hardy enough, including A. falcatum, with handsome foliage of a dark shining green; A. Lonchitis, the Holly Fern, a most interesting plant with long and stiff prickly leaves. Some of the varieties of our English A. angulare are very handsome, and well worth growing in pots or tubs in a shady corner. Once potted in good fibrous soil with thorough drainage, they require nothing but an ample supply of water for a long time.

ASPLENIUM.

This is a large and valuable family containing many plants of great garden value. One of the hardiest and most elegant is the New Zealand A. bulbiferum, so called because the upper surface of the leaf is often covered with young plants. The Lady Fern belongs to this genus, and many of its





beautiful varieties are well worth growing. Some have plain fronds, while others are beautifully hung with tassels at the points.

DAVALLIA CANARIENSIS (Haresfoot Fern).

A beautiful fern, well adapted for hanging baskets owing to its creeping habit. The rhizomes are stout and covered with brown scales, hence its popular name.

LOMARIA GIBBA.

Forms a stem like a miniature tree-fern, and keeps in good condition in rooms for some time.

NEPHRODIUM.

This family includes the Male Fern, N. Filixmas, of which there are many beautiful varieties. All do well in pots and are useful in a small state for house decoration, growing freely in well-drained loamy soil, but they require an abundance of water when growing.

NEPHROLEPIS EXALTATA. Illustration page 186.

Is another excellent basket plant, with long fronds arching over to a length of nearly two feet when well grown. When Ferns are grown in baskets they should not be merely taken down and watered, but the basket should be soaked in a pail of water for a time.

POLYPODIUM VULGARE (POLYPODY). Illustration page 191.

This common British species gives us many beautiful varieties suitable for growing in pans in a cool shady house. The Welsh form P. v. var. cambricum is one of the handsomest, while others are cristatum, cornubiense, and the Irish trichomanoides. They grow well in equal parts of loam, leaf mould, and sand.

PTERIS.

This genus furnishes some of the most valuable plants suitable for the decoration of the greenhouse or rooms. They last a long while in good condition, and may be grown on from year to year in the same room if carefully looked after in the matter of watering, and thorough drainage to prevent the soil from becoming sour. They are quite evergreen, and the new fronds are produced before the old ones turn brown. Fine specimens may be grown in 5 or 6-inch pots, and although not particular as to soil a sandy loam with leaf soil suits them best. Like most of the other Ferns mentioned before, the best time for potting on the plants is in spring. Clean dry pots should always be used, and the drainage should receive careful attention. different varieties in cultivation are very numerous, and some may be had with plain green leaflets (P. cretica); others have green leaflets with a central band of white extending the whole length (P. cretica var. albo-lineata); while others have heavily-crested, much-divided leaflets (P. cretica

var. Wimsetti). Young plants raised from spores always make the best plants, although the crowns may be readily divided in spring.

SCOLOPENDRIUM VULGARE (Hart's Tongue Fern).

A native of this country, containing many different varieties, some handsome, others of curious appearance. For elegance S. vulgare var. crispum is hard to beat, with its long leaves having wavy margins. It is an excellent plant for a dark or shady place. The potting soil should have plenty of finely-broken crocks or bricks mixed with it, and the plants should always have plenty of water. In showery weather the plants benefit by being placed out in it for a time. S. vulgare var. cristatum has the apex of the leaves beautifully crested, while in the variety multifidum the apex is much branched and forked.

Filmy Ferns.—These may be grown in a glass case which is kept constantly cool and moist. They should be planted in rough peat with plenty of broken sandstone mixed with it. They require to be sprinkled with water very frequently (several times a day). One of the most beautiful is Todea superba from New Zealand, with fronds like plumes. The Killarney Fern (Trichomanes radicans) is a spreading plant, with creeping roots, and muchdivided fronds.

CHAPTER XIII.

PALMS.

"Princes of the vegetable kingdom" is a name which has been applied to the members of this order, which are nearly all tropical plants. A few, however, are fortunately suitable for cultivation in a cool greenhouse. They are all of easy cultivation, the chief points being thorough drainage, and an abundant supply of water when growing, although they should never be allowed to get dry at the root. Palms will grow and flourish for a long time in small pots, and dislike to be overpotted. The soil most suitable for the majority is a mixture of one part loam, one part peat, and one part leaf soil, with plenty of sand to keep the soil open and sweet. The best for house decoration are:

KENTIA.

Two species of this genus, K. belmoreana, and K. fosteriana from Lord Howe's Island, are elegant species with spreading pinnate leaves of great beauty. They are valuable palms for house decoration and are probably used for this purpose more than any other.



Capsicum Annium, Chinese Giant.



Capsicum Annium, Tom Thumb.

LIVISTONA CHINENSIS.

One of the fan-leaved palms much grown for market work, as is the Kentia. It is a native of China, and as a table or window plant it will remain in good health for a considerable time if attended to in the matter of watering.

RHAPIS FLABELLIFORMIS.

Is another Chinese species of small elegant habit and flabellate leaves. It is very hardy, as is another species from Japan, R. humilis.

CHAPTER XIV.

CACTI.

These constitute a class of plant that have a certain attraction owing to the curious and grotesque forms assumed by most of the different kinds. One of the most distinct is the old-man cactus (Pilocereus senilis), which grows like a column, covered all over, especially at the top, with long white hairs. It seldom flowers in this country, and when it does they are produced at the apex and last only a few hours. Although many kinds are somewhat tender and require a heated house, numerous other species and varieties are hardy, and may be grown in a sunny frame or house without heat. Several are found wild growing in the Rocky Mountains of North America, and these form the hardiest section, containing many interesting plants. As they are all slow growing, they do not take up much space, and one may grow quantities of handsome Cacti in rooms or a cold greenhouse that will always prove of interest.

Cultivation.—Cacti are amongst the easiest of

plants to manage, and the reason why so many fail with them out of doors is that they get too wet in the winter season. In a greenhouse the moisture can be controlled, and their cultivation made easy. The best place for them is on a shelf as near the glass as possible, in order that they may obtain the greatest amount of light necessary for their well being. Potting when necessary is best performed in the early spring, the compost consisting of one half fibrous loam, and the other being made up of broken bricks, lime, rubbish, and sand, in equal quantities. Mix the whole up well together, and do not use it until it is fairly dry. Thorough drainage is most essential, and the pot should be filled up quite one-third with broken crocks. Use only dry and clean pots, and when repotting, turn out the plants and remove nearly all the old soil from the roots, as well as any dead or decaying roots. Then place some of the roughest material over the crocks, filling up around the plant and between the roots with the finer soil. Press the soil in firmly and do not water for a few days after potting. It is best to keep them close and a little warmer for a few days and syringe them occasionally on fine days. Some of the smaller kinds will grow and flourish in the same pot for years if the soil is kept sweet and clean. Watering must at all times be carefully performed, especially during the winter, and anything like a saturated condition of the soil must be avoided. In a cold house water must be sparingly given during November, December and January. At other times, especially in

summer when in full growth, they will require more,

but should never be kept wet.

Propagation is effected by means of cuttings or offsets and seeds. The former is the usual way, the cuttings being removed with a sharp knife, and laid on a sunny shelf. Here the roots will be produced, when the cuttings must be potted in sandy soil, and kept syringed for a time.

CEREUS. Illustration pages 192, 197.

Many of these have large showy flowers, but most of them require to be grown in a warmer house. In habit the different members vary to a great extent. Some are climbers, and these bear the largest flowers, but they are more tender. The erect growing kinds, like angled columns, are more hardy, and there are numerous varieties in cultivation.

ECHINOCACTUS.

Contains many interesting plants.

ECHINOCEREUS.

Low growing, many kinds having large flowers. They are among the hardiest of the family.

MAMILLARIA. Illustration page 198.

Is a beautiful genus forming small globe-like plants covered with spines of various colours. They will all grow freely in a cool greenhouse. Plants may be procured with white, yellow, red and brown spines.





Erica Gracilis.

OPUNTIA. Illustration page 199.

The Prickly Pear of southern Europe and Indian fig of South America are somewhat awkward in habit when they get to any size. They are worth growing in a small state on account of their distinct habit, the hardiest being those from North Western America, one of which is O. Rafinesquii.

PHYLLOCACTUS.

Is an old favourite, with the flat leaf-like stems and large crimson flowers. It has been much improved of late years, and many fine varieties with flowers of different shades of colour may be obtained from those nurserymen who make a speciality of Cacti. Of easy culture, they grow very well in a room in the house near the window. Watering must be carefully performed in winter, as the roots soon die in wet soil, or if the plants are put in pots too large. Plenty of sun is essential for ripening off the growths in summer. Some of the best kinds are P. Ackermanni, rich crimson; and P. crenatus, with creamy white, orange scarlet, purplish pink, and dark scarlet varieties.

PILOCEREUS SENILIS (OLD MAN CACTUS).

Mentioned above is a native of Mexico, and often attains a height of 20 to 25 feet there, with a diameter of 9 or 10 inches.

CHAPTER XV.

TOMATO.

In a cold greenhouse these useful plants may be very successfully grown, either planted out in borders or in large pots. Here they may be had in fruit long before they will ripen on a wall outside. Seeds should be sown in a little heat about the end of February. As soon as the seedlings have made their second leaves they should be potted off singly into small pots, using a mixture of sandy loam, leaf soil, and sand. As the plants increase in size they should be kept shifted on into larger pots, and plenty of air and water should be given at all times. The final shift should be into a rich loamy soil to which has been added a proportion of welldecayed cow manure. The plants should be placed in a sunny position, and as the stems grow they should either have a stout stake or be trained to the rafters. One stem will be enough to leave, and all side shoots should be removed as soon as they appear. After the fruit has set, manure water may be applied as often as twice a week.

This will encourage them to swell and form fairsized Tomatoes. As the fruit begins to turn colour the leaves shading it should be cut away in order to allow it to have all the light and air possible. Abundance of water must be supplied at all times, for the plants must never be allowed to get dry.

The cold greenhouse may also be utilised for growing on Tomatoes in the same manner for planting out against sunny walls, or in the open air. As the weather gets warmer the young plants should be more and more exposed to the air, finally planting them out about the end of May. After-treatment is exactly the same as for those

in pots.

CHAPTER XVI.

ROSES.

Illustration page 200.

No greenhouse, either heated or unheated, is complete without a few kinds of roses, grown either in pots or planted out in a border and trained up the rafters. Some of the many varieties being such free bloomers and producing a long succession of flowers are most valuable for the supply of buds for buttonholes at nearly all times of the year. At the same time their requirements are simple, and some of the climbing kinds, like Gloire de Dijon and Marechal Niel, may always be utilised with advantage against the end wall of the greenhouse, or be trained just under the glass. The Tea Roses and also the hybrid perpetuals are well suited for growing in pots, and with a sufficient quantity of plants, and a little heat, flowers may be obtained during the greater part of the year.

Cultivation.—To be successful with Roses the most essential thing they require is a rich loamy soil of a stiff rather than light nature. Plants for pot culture are considered best on their own roots, that is, raised from cuttings. They may be grown



Erica Hyemalis Alba.



Ficus Elastica (India-Rubber Plant).

from cuttings in pots, or lifted from the open ground in September, and potted up for flowering the following spring. For potting, a rich compost of turfy loam should be provided, with some decayed manure and a few small crushed bones intermixed. Plants recently lifted, however, do not flower so well as those that have been established in pots for one season at least. The hybrid perpetuals may be plunged outside during the winter in a bed of ashes and protected with dry litter in severe weather. The Teas, however, are better in a cold frame or house. As the growth allowed in pots must be somewhat limited, close pruning will be necessary, especially in the early stages of training, and the shoots must always be kept well thinned by summer disbudding. Established plants do not require repotting every year, and if their roots are healthy and not pot-bound a rich top dressing will be all that is necessary. Liquid manure occasionally given when the buds are developing is beneficial to the plants.

For forcing Roses to flower in early spring artificial heat is necessary, but with a cold green-house the plants after pruning may be moved into the house in February to flower later on. Plenty of light and air should be given, and syringing occasionally will induce them to break freely. When they have finished flowering the plants may be placed in a sunny position outside until the autumn, to thoroughly mature the wood in order to secure good flowers the next season. Watering must be carefully attended to at all times.

T

Roses.

Climbing roses that are trained to a greenhouse roof or rafter are best planted out in a prepared border. This may usually be made inside the house, and good soil and drainage must be provided. A depth of 1½ feet of good soil is the most suitable for Roses of all kinds when planted out. Roses permanently planted out under glass must be allowed their full season of rest all the winter; their roots should then be kept fairly dry, but during summer they require plenty of water. Many climbing varieties of Tea Roses make very ornamental plants during spring and summer, among the best being: Gloire de Dijon, fawn, shaded with salmon, very large, blooming well all the season; Marechal Niel, beautiful deep yellow and very sweet scented, one of the finest roses grown; Niphetos, pure white; William Allen Richardson, deep orange yellow; and Safrano, fawn colour, beautiful in bud.

Of hybrid perpetuals suitable for pots there is an endless variety, a small selection being Alfred R. Williams, carmine red; Beauty of Waltham, rosy-crimson; Baroness Rothschild, delicate pink; Duke of Edinburgh, bright vermilion; Her Majesty, delicate rose; and La France, silvery white with the back of the petals rose; a free

bloomer and highly fragrant.

Teas are represented by Anna Olivier, rosy flesh; Belle Lyonaise, pale lemon; Gloire de Dijon; Etoile de Lyon, deep yellow; Madam Lambard, bright red; Marie van Houtte, lemon yellow, edged with rose; and Perle des Jardins, bright orange yellow.

Many newer and improved kinds belonging to the above sections have been brought out during the last few years, some of great beauty and very

free flowering.

Pruning.—The pruning of different Roses depends a great deal on the section to which they belong, and the way in which they are trained, either as climbers or pot plants. Spring pruning is practised most extensively, and this is performed from the middle to the end of March for all outside roses. For pot roses grown inside earlier pruning may be carried out in February or even before, if frost can be kept out of the house. Hybrid perpetuals may be cut back, leaving from four to six eyes on each shoot, after thinning out all the weak ones. Teas, which do not usually grow so vigorously, require less pruning and thinning out, merely shortening back the long growths and thinning out the weak flowerless wood. It is difficult to say precisely how a certain plant must be pruned, and a great deal must be left to the judgment of the operator.

CHAPTER XVII.

MISCELLANEOUS PLANTS.

AZALEAS. Illustration page 205.

These shrubby plants are extremely useful for greenhouse or room decoration. The Ghent or American Azaleas are usually procured from the Continent for forcing into flower from Christmas onward. Without heat, however, they will be much later coming into flower. They are potted up in rough loam and peat, mixed with leaf soil and sand. The flowers are of many brilliant shades of colour, ranging from yellow to pink, orange, scarlet, and crimson. These Azaleas are deciduous and lose all their leaves in winter. The Indian or Chinese Azalea is evergreen, with varieties flowering from December to May. With these plants thorough drainage is essential, and they should be potted up in a mixture of peat, loam, leaf mould, and sand. Firm potting is essential, and the soil should be rammed firmly into the pot. The best time for potting is after they have done flowering and before the new growth has been made. The plants may be stood outside during the summer months and be brought into the house again in





October. Water must be given freely during the flowering and growing season, and the plants must never be allowed to get dry.

ASPARAGUS PLUMOSUS. Illustration page 206.

Is an elegant evergreen climber, with smooth twining stems and spreading branches. For training up pillars and the rafters it is an excellent plant, and is also invaluable for cutting purposes. It may either be planted out in a border in the house, or grown in a pot. It likes a rich loamy soil, with some manure and leaf mould, and plenty of water when in full growth. To increase the plant the crowns can be divided when it is resting in winter or early spring. More suitable for pot work is A. plumosus var. nanus, which is an elegant dwarf-growing variety with gracefully arching stems. For bouquets the cut sprays of both kinds retain their freshness in water for a long time. They both come from South Africa.

CAMELLIA.

In a small state these handsome plants may be grown in pots, and will flower if well looked after in the matter of watering. As the Camellia is quite hardy it may be grown in a cold house, but unfortunately it soon gets too large for a small house. In summer the pots may be stood outside after having made a little fresh growth. Plenty of water is essential at all times, and the best time for potting is directly after they have finished

flowering. The numerous hybrids are all the offspring of C. japonica, and may be obtained in many shades of colour.

CAPSICUM ANNUUM (COMMON CAPSICUM). Illustration pages 211, 212.

These are ornamental fruiting plants if well grown in pots under glass. The fruits are of various shapes, as may be seen in the illustrations in another part of this work. Seeds should be sown in March in a little heat, and when the seedlings are large enough they should be potted in small pots. Keep them growing, and potted on as they require it till they are eventually put into 6 or 7-inch pots. Rich soil is required as well as plenty of water. The Chili is the fruit of C. baccatum, and both are used in a green state for pickles, and when ripened and ground as Cayenne Pepper.

CYPERUS ALTERNIFOLIUS. Illustration page 217.

A rush-like plant, which makes an elegant and graceful window ornament. It may be grown in a small pot in a compost of loam and sand, with a little peat added. Plenty of moisture is essential, and propagation is effected by division or by seed. There is also a form with variegated foliage, and both are valuable for decorative purposes.

CYTISUS.

Useful spring-flowering shrubs of which two kinds are generally grown, C. racemosus and C.

canariensis. They are best potted in turfy loam and sand, and may be increased by seeds or cuttings. After flowering they should be cut back and kept close and syringed for a time to induce fresh growth. When growth is completed the plants should be stood outside to ripen off till the appearance of frost. C. racemosus is the most profuse bloomer and makes nice little specimens in 5 or 6-inch pots, lasting in a room in good condition for a long time.

DEUTZIA GRACILIS.

A most ornamental deciduous shrub with sprays of white flowers, well adapted for growing in a cold house, or for forcing. When forced the flowers appear before the leaves, but when grown in a cool house the flowers and leaves appear together, making it much more presentable. For potting use a mixture of loam and sand with some cow manure if possible. Plants which have been growing outside may be lifted and potted up in October, and then placed in a cold frame or house to come into flower gradually in the following March or April, if not placed in heat. With heat they may be had in flower in February. After flowering the plants may be stood outside during the summer months, and if the pots are very full of roots they should be repotted at this time or in the autumn. After repotting they should be kept shaded and syringed occasionally for a week or two.

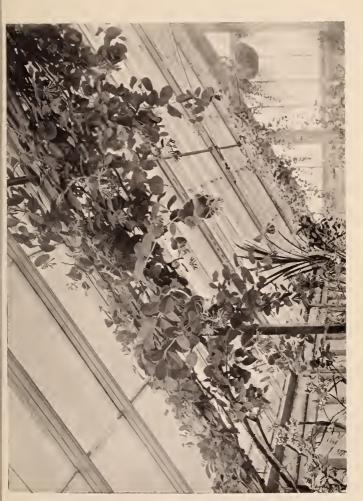
ERICA (HEATH). Illustration pages 223, 218.

Many of these are valuable winter-flowering plants, two very good ones being E. gracilis and

E. hyemalis. They are propagated by means of cuttings when fresh growth has been made early in the year. These are inserted in sandy peat with a layer of silver sand on the top, covered with a bell glass, and placed in heat. When rooted and growth commences air should be admitted gradually and the young plants exposed to more light. They should remain in the same pot till the following spring, and then be potted up in peaty soil. Watering must be very carefully performed, for the plants must never be allowed to get too wet or become dry. Ericas like plenty of air at all times and dislike fire heat, and a temperature of 40 degrees is most suitable for them in winter. In summer the plants may be put outside with the pots plunged to the rim in ashes.

FICUS ELASTICA (INDIA RUBBER PLANT). Illustration page 224.

This handsome plant, which is much grown for house decoration, belongs to the Fig family, and comes originally from the East Indies, whence it was introduced in the year 1815. It stands confinement in rooms well, and in a small state does well in pots. As they get older the lower leaves drop off, causing them to look unsightly. The tops should then be taken off and put in as cuttings in heat. Any of the members of this family do well in sandy loam and leaf soil, and only small pots need be used. The roots require plenty of water, and the leaves should be kept clean by sponging with clear water







Plumbago Capensis on Roof.



HYDRANGEA. Illustration page 229.

Ornamental plants of easy cultivation and useful for greenhouse or room decoration. H. hortensis and its varieties are the most useful and showy, with large heads of flowers. They may be grown on from year to year in pots, or cuttings may be struck annually in each spring to flower the following year. The cuttings should be taken from young shoots that are not showing flower, and should be potted up singly as soon as rooted, and grown on during the summer outside. Hydrangeas like a rich soil, such as loam and cow manure, and any quantity of water during the growing season. The colour varies very much according to soil in which it is grown, and there are many varieties in cultivation.

LANTANA SALVIÆFOLIA. Illustration page 230.

A useful free-flowering pot plant, continuing in bloom all the summer and well into autumn. It is bushy in habit and will grow freely when potted up in loamy soil. It may be increased by means of cuttings in autumn or spring, and the young plants will soon develop and attain flowering size. They may be wintered in a cold greenhouse where the frost is kept out. Old plants cut back and repotted in spring are best for inside pot work, their growth being shorter jointed, and being more floriferous.

LAPAGERIA ROSEA.

This elegant plant is one of the most beautiful

flowering climbers that we have, and as it is hardy outside in the warmer parts of this country it is well adapted for growing in a cold house. Trained against a wall or the roof of a greenhouse, the pendent wax-like flowers are seen to great advantage, and as there are both rose-coloured and pure white forms they may be grown together with pretty effect. They may be propagated by means of seeds sown in sandy peat soon after they are ripe, and placed in a little heat, but the most usual method is by layering; a strong shoot being selected, bent down, pegged, and covered with soil, leaving the growing point free for about a foot. These soon root and make good plants. Lapagerias may be grown in pots, but are best planted out in a prepared border. Thorough drainage is essential, and the best compost to use is three parts peat to one of loam, and plenty of sharp sand and charcoal mixed with it. Plenty of water must be given when the plants are growing, and when doing well they flower from summer into late autumn. Green the growing shoots in spring fly is troublesome on the young shoots in spring, and must be kept down by fumigating or syringing. Other insects, like Mealy Bug and Thrips, may be got rid of by sponging or syringing with a strong solution of soft soap and tobacco. A cool and somewhat shady place suits these plants best. Lapageria is a native of Chili.

LONICERA SEMPERVIRENS (EVERGREEN HONEY-SUCKLE). Illustration page 235.

The common Honeysuckle of our hedges is



Lapageria Rosea



familiar to most people, and this plant is closely allied to it, with beautiful scarlet and yellow flowers. A native of North America, it is a twining plant, and one of the most handsome of all the Honeysuckles. It should be planted out in a border in the greenhouse, and is an excellent plant for training up the rafters of the house. The flowers are borne in a long succession through the spring and summer. As this species flowers on young wood it should be cut back after flowering. If a border is not available in the greenhouse, it may be grown in a good-sized pot, using a mixture of good fibrous loam, leaf soil, decayed cow manure, and sand.

MUEHLENBECKIA PLATYCLADA. Illustration page 236.

An interesting plant from the Solomon Islands, with flat stems and hardly any leaves. It bears its small white flowers throughout the year, followed by bright red and purple berries.

MYRSIPHYLLUM ASPARAGOIDES.

A deciduous twiner which thrives best in a warm part of the greenhouse potted in a mixture of loam and leaf soil. It is useful for training up pillars, the branchlets being very pretty and spray like, and are much used for making bouquets, and in the composition of wreaths, table decorations, &c.

OXALIS FLORIBUNDA.

Is an excellent basket plant, blooming for the

242 Plumbago Capensis—Primula Sinensis.

greater part of the summer. It is of very easy cultivation, growing in almost any soil. The principal thing is to keep the basket well supplied with water, and it should be taken down occasionally and dipped into a tank to thoroughly soak it. The flowers are rose-coloured and very freely produced.

PLUMBAGO CAPENSIS. Illustration page 237.

One of the most effective greenhouse climbers, lasting in flower for a considerable period. It is well adapted for training up pillars or along the rafters, and may be grown in a pot. It is, however, better and grows more freely when planted out in a border of loamy soil. The beautiful pale blue flowers are borne in profusion on the shoots of the current year. After flowering the shoots should be cut back to within two or three inches of the stem, leaving two or three eyes for breaking next spring. During winter, when at rest, it should be kept rather dry at the roots. A very hardy plant, this is sometimes used for bedding out in summer, the plants being grown in pots and plunged out in the soil without being turned out of the pot. Treated like this, they flower for the greater part of the summer.

PRIMULA SINENSIS (CHINESE PRIMULA).

The Chinese Primula is extensively grown for greenhouse and room decoration from late autumn to spring. During that time they are much appreciated, and as they can be had in a great variety of





Statice Profusa (Sea Lavender).

colours it is no wonder that they are such favourites. There are both single and double forms, but the single ones are the easiest to grow. Seed may be sown in either April, May or June in shallow pans well drained and filled with light rich soil (loam, leaf mould, and sand). Cover the seeds lightly, and place them in the frame on a hotbed for preference, with a piece of glass over the pan. They must be shaded, and as soon as the seedlings are large enough pot them up singly, and keep close for a few days, after which they can be grown on in a cold frame as near the glass as possible. Plenty of air should be given at all times, and the plants must be potted on as they require it, eventually putting them in 5-inch pots, which are quite large enough for flowering in. In potting the crowns must not be buried, but should just rest on the top of the soil. Throughout the summer the plants ought to be shaded a little during the hottest part of the day. When moved into the greenhouse keep them as near the glass as possible and water carefully so that they do not get too wet and sour.

ROCHEA JASMINEA (JASMINE FLOWERED). Illustration page 238.

Is a succulent plant from South Africa, much grown for decorative purposes on account of its beauty. It is easily grown in a mixture of sandy loam and brick rubbish, with plenty of drainage. Water must be sparingly given during winter. The rose-coloured flowers of the plant illustrated are very showy, and there is another species with

246 Solanum Capsicastrum—Veronica.

scarlet flowers (R. coccinea), well worth growing. If the soil is sweet they do not need repotting often.

SOLANUM CAPSICASTRUM. Illustration page 243.

This handsome shrubby plant is very ornamental in winter with its round scarlet berries. It succeeds well when potted in good loamy soil, and may be grown in a frame during the summer. Another member of this family is the Egg plant or Aubergine (S. Melongena). It is an annual, and the seeds should be sown in April in a little heat. Seedlings should be potted on as they require it, and the plants may be grown on in the greenhouse, or even outside in a warm position, when they get to a good size. The fruits are very ornamental and vary in colour and shape a good deal, with purple, black, and white shades, and oval, round, and long in shape.

STATICE (SEA LAVENDER). Illustration page 244.

S. profusa is a free flowering plant with everlasting flowers closely allied to our native Sea Lavender, which is found round our sea shores. It grows about 2 feet high and is very effective, lasting for such a long time. It does well in any good soil.

VERONICA SPECIOSA.

Many of the shrubby New Zealand Veronicas are very handsome and showy, and probably this

is one of the best. It makes a nice bushy plant, and bears its spikes of deep purple flowers during the summer months. A mixture of loam, leaf mould, and sand suits them well, and they may be potted in spring or autumn. They are propagated by cuttings, which root freely if inserted in sandy soil in a pot, and placed in a frame which is kept close. If this is done in summer they are well rooted and may be potted up before the winter, and make good plants before the next summer. They may be kept in a cold frame during the winter. Another elegant species is V. angustifolia, with narrow leaves and long spikes of white flowers.

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